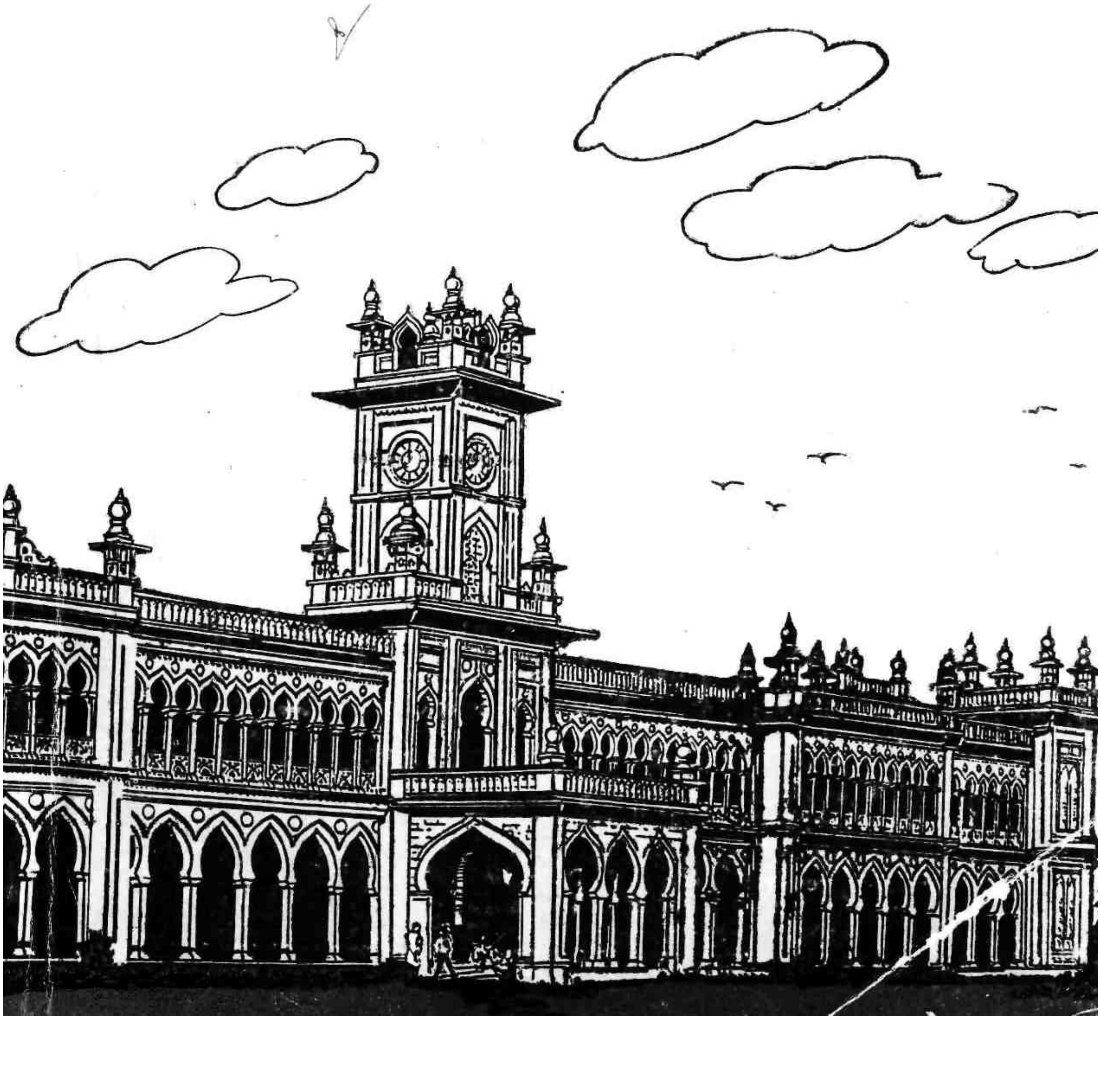
TNAU

NINETEENTH ANNUAL REPORT

1989 - 90



BOARD OF MANAGEMENT

Chairman

Vice-Chancellor	Dr. S. Jayaraj
Special Commissioner and Secretary to Government and A. P. C., Agriculture Department	M. Raghupathy, I. A. S., (upto 7.2.1990)
	Tmt. Latika D. Padalkar, I. A. S., (from 8.2.1990)
Secretary to Government, Finance Department	Thiru N. Narayanan, I. A. S.,
Director of Agriculture	Thiru N. P. Gupta, I. A. S., (upto 21.7.1989)
	Thirumathi S. Malathi, I. A. S., (from 22.7.1989)
Director of Animal Husbandry	Dr. C. K. Kalyanasundaram, M.V.Sc.
Director of Fisheries	Thiru Arun Ramanathan, I. A. S., (upto 12.12.1989)
	Thiru S. Machendranathan, I. A. S., (from 13.12.1989)
Principal Chief Conservator of Forests	Thiru S. John Joseph, I. F. S ,
Agricultural Scientist	Dr. G. S. Venkataraman Joint Director (Research) Indian Agrl. Res. Institute, New Delhi
Crop Farmer	Thiru K. G. Krishnamurthy
Livestock Farmer	Thiru A. Balasubramanian, B. A. B. L.
Agro-Industries	Dr. B. V. David
Women Social Worker	Sr. Rita Thyvettil
Educationist	Dr. K. R. Ramaswamy
Nominee of the ICAR	Dr. S. Nagarajan Asst. Director General
Member of Legislative Assembly	—
Member of Legislative Council	—
Member-Secretary	Dr. A. Narayanan Registrar

TAMIL NADU
AGRICULTURAL UNIVERSITY

NINETEENTH ANNUAL REPORT

April 1, 1989 to March 31, 1990

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1. INTRODUCTION

The nineteenth Annual Report of Tamil Nadu Agricultural University covers the period from 1.4.1989 to 31.3.1990. Significant achievements were made during the year in the fields of agricultural education, research and extension education. New postgraduate courses leading to M.Sc.degree were started in Forestry and Environmental Science. Part time programme in Ph.D. was revived during this academic year and a total of 73 staff members were admitted under faculty improvement programme as part time students. Ph.D. programme at A.C.& R.I., Madurai was started in the disciplines of Agronomy, Plant Breeding and Genetics, Plant Pathology, Agrl.Entomology, Soil Science and Agrl.Chemistry and Econometrics. Fifteen new crop varieties were released for general cultivation. New agricultural implements and tools were designed to reduce the cost of cultivation and to increase the efficiency. New production techniques were developed in the faculties of agriculture, horticulture and agricultural engineering to enhance the productivity and production potential of various crops. Socio-economic studies covering cost of cultivation of major crops, employment of rural labour force, techno-economic studies at district level, economics of sericulture, dairy, and mixed farming, diffusion and adoption of new technologies, demographic studies etc. were also undertaken. The reports provide data support for grass root planning. The research programmes of the University are multidisciplinary, field oriented and applied in nature to ensure quick impact on rural economy. Regional Research Councils, Research Councils and Scientific Workers' Conference provided ample opportunities for close interaction between research workers and extension staff. These were the major fora for identification of priority areas of research and also for faster dissemination of results generated during the year. Further more, the status reports of the seven agro-climatic zones involving microlevel details serve as guides in project formulation and planning. A Research Project Approval Committee has been specially constituted for effective formulation and monitoring of the progress of the sub projects.

In tune with the national consensus the University has prioratised research areas like biotechnology, oil seeds production, water management, biological control of insect pests and diseases, integrated farming system, post harvest technology, designing and development of new farm implements and tools, fish farming, women participation and social engineering and upliftment of scheduled castes and other backward communities.

Tamil Nadu Agricultural University had always given special efforts to popularise new innovations and technologies developed by the

scientists. This has been possible through the strong extension education net work comprising of communication centres, Krishi Vigyan Kendras, National Demonstration Centres, and Plant Clinic Centres located at different agroclimatic zones of the state. Field days, Farmers' days and training programmes were organised to discuss and disseminate the latest technologies. Mass media like radio, television, newspapers and farm magazines were utilised to disseminate new techniques of agricultural production and allied subjects.

The major achievements of the University in the fields of education, research and extension education are summerised below :

Education

* During the year, 683 students were admitted in the undergraduate programmes and 340 students were admitted in the postgraduate courses in the four campuses of the University.

* New postgraduate programmes leading to M.Sc.degree in Environmental Science and Forestry were started.

* Ph.D. programme at Agricultural College and Research Institute, Madurai was started in the disciplines of Agronomy, Plant Breeding and Genetics, Plant Pathology, Agrl.Entomology, Soil Science and Agrl.Chemistry and Econometrics.

* Part-time programme in Ph.D. was revived during this academic year and a total of 73 staff members were admitted under faculty improvement programme as part-time students.

* M.Sc.(Ag) programme in Plant Nematology was revived during the year.

* A Regional level teaching seminar on Agricultural Education was organised at TNAU, Coimbatore during July,1989.

* A separate college for forestry was established.

* The academic activities and infrastructural facilities at third Agricultural College and Research Institute, Killikulam, Tirunelveli district have been strengthened.

* The Fourth Agricultural College at Kumulur, Lalgudi Taluk, Trichirapalli district has been established and started functioning from the academic year 1989-90.

* Two new Board of Studies viz., Board of Studies, Post-graduate Courses and Board of Studies, Faculty of Forestry were constituted.

Research

The following new schemes were sanctioned during 1989-90.

University Plan Schemes

* *Research on dryland horticultural crops in red soil tract, Killikulam.*
* Seed production practices in upland rice, Paramakudi.
* Studies on the role of VA-Mycorrhizal fungi in the establishment and 'P' nutrition of Agricultural and Plantation Crops, Coimbatore.

ICAR Schemes

* Adaptive research on sugarcane, Cuddalore.
* Isolation and Characterisation of microbial products involved in stable soil aggregation, Coimbatore.
* Diversification of male sterile line in pearl millet, Coimbatore.
* NARP *Research sub project for the Establishment of Regional* Research Station at Pechipari, sub station at Thirupathisaram in the high rainfall zone.
* Promotion of Research and Development efforts in Hybrids in selected crops viz., Sunflower, Pigeonpea, Rice and Pearl Millet, Coimbatore, Bhavanisagar.

  Agro-Technique for maximising yield in chewing Tabacco, Western zone, Bhavanisagar.

  Biological control of a few major insect pests associated with sugarcane, coconut, banana and mango crops by using entomophlic nemotodes, Madurai.

Government of India Schemes

* Biological control of insect pests through bio-technology, Coimbatore.
* Biological control of root rot diseases of pulses and oil seeds and mass multiplication of antagonists, Coimbatore.
* Establishment of pilot plants for mass production of **Trichogramma** and **Chrysopa** and field studies with genetically improved strains, Coimbatore.
* Nitrogen fixation and carbon assimilation in stem nodules of **Sesbania rostrata**, Coimbatore,
* Production of fruits and vegetables-Augumenting vegetable seed production-Periakulam, Bhavanisagar, Coimbatore and Palur.

International Collaborative Schemes

* Research project in collaboration with IFPRI-Transfer of Agricultural Technology and dynamics of information flows within the technology sector, Coimbatore.

* Research project in collaboration with IFPRI-Rural infrastructure and agricultural growth, Coimbatore.
* IFPRI scheme-Response of major surface irrigation system to drought, Coimbatore.
* Ford Foundation-Pilot study-Conduct of a workshop on policies and management strategies for ground water development in low rainfall hard rock area, Coimbatore.
* FAO scheme-Studies on the development of practical technology for Azolla sporocarp production, Coimbatore.
* IFPRI Scheme-Modelling in irrigation investment, Coimbatore.

Private Agency Schemes

* Evaluation of the controlled release of carbofuran formulation developed by National Chemicals Lab, Pune.
* Sakthi Sugars-Studies on the effect of alcohol distillery effluent on soil fertility status, yield, and quality of crop produce, Coimbatore.

State Government Schemes

* Hill area development programme - The Nilgiris District - Use of microbial processes for restoration of shola forests in Nilgiris, Ooty.
* National water shed development programme for rainfed agriculture (NAWPRAG), *Conduct of adaptive trials, Paiyur.*
* On-farm water management studies, Bhavanisagar (CADA).
* Preparation of a project report on the present status of processing of oil seeds in Tamil Nadu and to recommend ways and means for improving the extraction of oil from various oil bearing materials, Coimbatore.

Variety Release

Fifteen new crop varieties were released for general cultivation through the concerted efforts of the University as detailed below :

Rice	:	CO 45	Sugarcane	:	CO 8021
Sorghum	:	K 9	Chilli	:	PKM 1
Cotton	:	TCHB 213	Mango	:	PKM 2
Groundnut	:	VRI 3	Acid lime	:	PKM 1
Sesamum	:	Paiyur 1	Brinjal	:	Palur 1
Greengram	:	CO 5	Sword Bean	:	SBS 1
Soybean	:	ADT 1	Tree Crop	:	<u>Acacia holosericea</u>
Sugarcane	:	COC 90063			

Apart from varietal improvement, several new technologies were developed for increasing production and profit as detailed hereunder :

* Application of 100 kg of N as neem coated urea along with **Sesbania aculeata** incorporation recorded a grain yield of 9.6 t/ha in the variety IR 64 as against 5.6 t/ha in control.

* In rainfed rice, spraying thiobencarb at 1.5 kg ai/ha and one hand weeding on 40 DAS recorded significantly higher yield of 956 kg/ha over farmers' method (609 kg/ha) of two hand weeding on 20 and 40 DAS.

* Application of Zinc sulphate @ 30 kg/ha combined with 2.5 kg of $CuSO_4$ gave significantly higher yield of 21% over zinc sulphate alone in soils where Zn and Cu are deficient.

* Neem and pungam cake and neem coated urea reduced the rice blast incidence.

* Application of acephate (Asataf 75 sp) at 625 g/ha twice on 60 and 75 DAT recorded 94% reduction in the population of BPH.

* Carbendazim @ 250 g/ha or mancozeb one kg/ha gave good control of sheath blight when applied at panicle initiation and heading.

* Application of micronutrient mixture at 12.5 kg/ha with FYM @ 12.5 t/ha to rainfed ragi recorded the highest grain yield of 1544 kg/ha.

* Sorghum intercropped with sunflower at 4:2 ratio was found to be more remunerative than sole crop under rainfed condition.

* Combination of CO 26 sorghum with CORG 14 redgram in the ratio of 3:1 recorded the highest monetary return of Rs.6327/ha at Aruppukottai region.

* Spraying neem seed Kernel extract 5 per cent on 15 DAS followed by dusting BHC 10% @ 25 kg/ha twice at 50 per cent flowering and 15 days later effectively checked thrips and galerucid damage in blackgram.

* NPV 125 LR/ha + Tinopal 1 per cent + Jaggery 20 per cent registered highest cost benefit ratio of 1:15.5 by controlling **H.armigera** in chickpea. Cartap 0.05 per cent enhanced the virulence of NPV of **H.armigera**.

* Summer irrigated blackgram cv ADT 5 recorded highest grain yield of 996 kg/ha under 30 x 5 cm spacing and 100 kg P_2O_5/ha.

* Kaolin 3 per cent spray at 30 (Flowering) and 60 (pod filling) days resulted in reduced water loss and increased pod yield in JL 24 and VRI 2 groundnut.

* Groundnut pods can be stored for 10 months with minimum loss in viability in PVC containers with calcium chloride treatment at 5 g/kg of pods.

* Application of 20 kg N/ha as urea to TMV 3 sesamum recorded a grain yield of 569 kg/ha.

* Foliar application of ferrous sulphate at 2000 ppm was found to be effective in controlling the pencil point disease in coconut.

* Bromodialone 0.005 per cent and Rodacake 0.025 per cent were effective in checking rodent damage in coconut.

* Pre-emergence application of atrazine @ 2 kg a.i/ha followed by one hand weeding on 45th day effectively controlled the weeds and significantly increased the cane yield.

* In sugarcane, trash mulching the ridges on 3rd day after planting resulted in saving of 4 to 7 irrigations besides increasing cane yield.

* Soybean seeds treated with BHT (Bukylated hydroxy toluene) at 0.01 per cent and nochi leaf powder stored well for 8 months with 70 per cent germination.

* Spraying ethrel 1000 ppm induced male sterility in tomato.

* In Periyar-Vaigai command area, the sequence of groundnut (June-September) followed by rice (October-February) recorded higher monetary returns.

* Under turn system of irrigation, irrigating the rice crop once in 7 days during vegetative phase and once in 5 days during reproductive phase was found to be optimum.

* Useful double haploids have been generated through anther culture of selected sorghum varieties.

* A combination of high plant density at 1.0 lakh plants/ha, cycocel application (Seed treatment at 1000 ppm + foliar spray at 75 ppm at 65 days) and application of NPK at 160:80:80 kg/ha registered the highest seed cotton yield of 30.3 q/ha.

* Under wetland conditions, integration of fishery, poultry and mushroom fetched an additional income of Rs.20500 per year per hectare over conventional cropping of rice-rice-pulse.

* Mandarin on Rangpur lime root stock was found to be the best under shevroy conditions.

* Application of zinc sulphate as foliar spray (0.5 per cent) and green leaf mulch (30 kg/basin) was proved to be the best to increase the yield of acid lime trees.

* Closer spacing of 1.0 m x 1.0 m was more remunerative for cardamom than the wider spacing of 1.5 m x 1.5 m.

* Application of 60 kg of FYM per palmyrah palm registered high padaneer yield.

* Sowing the seeds of **Ailanthus excelsa** in cold water for 2 days before sprouting increases the survival of seedlings to 95 per cent in the nursery.

* Air drying the neem seeds for 3 days and transferring to mud pots burried in moistened sand (50-60 per cent) retains the germinability to 78 per cent upto 2 months.

* A simple seed pelleting unit, korai spliter, and gingelly grader were designed and developed.

* A new method in cocoon stiffling using biogas by a process of asphyxiation has been standardised.

* Seed coating with bio-digested slurry increased the germination percentage and plant growth.

Transfer of Technology

The Directorate of Extension Education in the University effectively and rapidly disseminated the research information developed at various centres to the farmers. A summary of the activities is presented below :

* The six Krishi Vigyan Kendras at Coimbatore, Madurai, Trichy, Vridhachalam, Kattupakkam and Pondicherry conducted on-campus and off-campus training programmes in agriculture and allied activities. A total of 895 training programmes was conducted and the beneficiaries included 20624 farmers 8459 farm women, 1711 extension workers, 1859 youths and 197 other categories of personnel.

* The scientists of plant clinic centres have been actively engaged in diagnosing various crop malodies and suggesting timely solutions (911 farm advisory services) besides conducting 138 trainings, 157 demonstrations, 96 group meetings, 19 field days and 5 farmers' days.

* ICAR sponsored National Demonstration Scheme functioning at Namakkal organised 12 training programmes, 22 skill demonstrations, 6 village/group meetings and 13 field days for providing

the feasibility of achieving maximum output in rainfed crops by following various recommended practices.

* Under the lab to land programme of the ICAR 300 farm families were adopted by six TNAU centres. These families were provided with technical guidance and input support on activities related to agriculture, horticulture, agricultural engineering, home science and sericulture.

* Farm School on AIR offered lessons relating to resource management, integrated pest, disease and weed control, pulses production and control of cattle diseases benefitting 2281 registered farmers and thousands of other farmers indirectly.

* Thirteen correspondence courses in agriculture, horticulture, animal husbandry, poultry, fishery and sericulture were offered for which 676 farmers had been enrolled and benefitted.

* New audio cassette lessons on sugarcane, mushroom, forage crops, cordamom, pepper and turmeric were prepared and 59 cassette lessons were distributed.

* The Video Production unit prepared five general programmes and 16 vayalum valvum programmes which were telecast through Doordarshan Kendra, Madras.

* The training unit conducted 28 T&V training programmes benefitting 497 extension personnel besides 12 training programmes for the benefit of 220 other categories of extension personnel such as administrators, defence personnel etc.

* Students counselling and placement centre provided coaching for various competitive examinations, self employment training programmes for the farm graduates, campus interviews and information on employment opportunities.

* Information Service Centres were established at five TNAU centres for dissemination of information to the farmers every week. Messages were processed and sent to all mass media and extension functionaries.

Focus for 1990-91

Education

* Starting M.Sc.degree programme in Forest Biotechnology.

* Starting M.E.(Ag) degree programme in Dairy Science and Food Engineering.

* Reviving M.Sc.(Ag) degree programme in Seed Technology and Agricultural Microbiology at Agrl.College and Research Institute, Madurai.

* Starting Ph.D. degree programme in Biotechnology and Forestry.
* Offering diploma courses in Horticulture.
* Offering courses to postgraduate students in agriculture for programming and computer use.

Research

* Evolving high yielding crop varieties tolerant/resistant to biotic and abiotic stresses.
* Developing refined integrated pest, disease, nutrient and weed management practices.
* Greater emphasis on pulses and oilseeds research.
* Operational research on soil reclamation and crop management.
* Dryland and waste land development.
* Exploitation of biotechnology and genetic engineering for crop improvement.
* Forestry research including agro-forestry and farm forestry.
* Emphasis on microbial research and biofertilizers.
* Integrated nutrient management recycling industrial and agricultural wastes.
* Developing farming systems integrating animal husbandry and fisheries.
* Intensification of research on water management.
* Post-harvest research in agricultural and horticultural crops.
* Research on fruit processing and fruit based products.
* Seed production, processing and storage techniques for vegetables.
* Strengthening of breeder seed programme.
* Developing seed production technology for hybrid rice and oilseeds.
* Design and development of new farm implements and tools.
* Action research in rural development modelling.
* Studies on increasing income and employment opportunities for rural women and youths.
* Correspondence courses in English for the farmers throughout the country.
* Out reach training programmes.

* Training courses for the extension personnel in State Department of Horticulture and Agricultural Engineering.
* Intensive training to women in Agriculture.

2. UNIVERSITY ADMINISTRATION

OFFICERS OF THE UNIVERSITY

Chancellor	:	His Excellency Dr.P.C.Alexander, Governor of Tamil Nadu
Pro-Chancellor	:	Thiru Ko.Si.Mani, Hon'ble Minister for Agriculture
		Thiru Veerapandi Arumugam, Hon'ble Minister for Agriculture
Vice-Chancellor	:	Dr.S.Jayaraj
Registrar	:	Dr.A.Narayanan
Director of Research, Coimbatore	:	Dr.S.Chelliah
Director of Extension Education, Coimbatore	:	Dr.N.Shanmugam
Dean,Agrl.College and Research Institute, Coimbatore	:	Dr.SP.Palaniappan
Dean,Post-graduate Studies	:	Dr.G.V.Kothandaraman
Dean, College of Horticulture, Coimbatore	:	Dr.K.G.Shanmugavelu (upto 30.11.89)
		Dr.S.R.Sree Rangaswamy (from 1.12.89)
Dean,College of Agrl. Engineering, Coimbatore	:	Prof.K.R.Swaminathan
Dean, Madras Veterinary College, Madras	:	Dr.P.Richard Masilamoni (upto 19.9.89)
Dean, Veterinary College and Research Institute, Namakkal	:	Dr.P.Sadasivam (from 1.3.89 to 19.4.89)
		Dr.S.Shanmugasundaram (from 20.4.89)
Dean, Fisheries College, Tuticorin	:	Dr.M.Devarajan
Dean,Agrl.College and Research Institute, Madurai	:	Dr.T.S.Manickam
Dean,Agrl.College and Research Institute, Killikulam	:	Dr.G.Soundarapandian

Director, School of Genetics, Coimbatore	:	Dr.S.R.Sree Rangaswamy
Director, Centre for Soil and Crop Management Studies, Coimbatore	:	Dr.S.Sankaran
Director, Centre for Plant Protection Studies, Coimbatore	:	Dr.P.Vidyasekaran
Director, Centre for Agrl. and Rural Development Studies, Coimbatore	:	Dr.A.Kandaswamy
Director, Water Technology Centre, Coimbatore	:	Dr.P.Kandaswamy
Director, Tamil Nadu Rice Research Institute, Aduthurai	:	Dr.A.Abdul Kareem
Director of Research (Animal Science), Coimbatore	:	Dr.S.Shanmugasundaram (from 3.3.89 to 17.4.89) Dr.S.Chelliah (from 18.4.89 to 27.4.89) Dr.S.Shanmugasundaram (from 28.4.89 to 7.5.89) Dr.S.Chelliah (from 8.5.89 to 25.9.89)
Director, Centre for Animal Production Studies, MVC, Madras	:	Dr.V.Ulaganathan
Director, Centre for Animal Health Studies, MVC, Madras	:	Dr.P.Mahalingam
Comptroller	:	Thiru V.Athmanathan
Estate Officer	:	Thiru N.K.Ramiah (upto 4.7.89) Thiru D.Rajapathy (from 5.7.89)

BOARD OF MANAGEMENT

Chairman

Vice-Chancellor .	:	Dr.S.Jayaraj
Special Commissioner and Secretary to Government	:	M.Raghupathy, I.A.S., (upto 7.2.1990)

A.P.C.,Agriculture Department		Tmt.Latika D.Padalkar,I.A.S., (from 8.2.1990)
Secretary to Government, Finance Department	:	Thiru N.Narayanan,I.A.S.
Director of Agriculture	:	Thiru N.P.Gupta,I.A.S. (upto 21.7.1989) Thirumathi S.Malathi,I.A.S. (from 22.7.1989)
Director of Animal Husbandry	:	Dr.C.K.Kalyanasundaram,M.V.Sc.
Director of Fisheries	:	Thiru Arun Ramanathan,I.A.S. (upto 12.12.1989) Thiru S.Machendranathan,I.A.S. (from 13.12.1989)
Principal Chief Conservator of Forests	:	Thiru S.John Joseph,I.F.S.
Agricultural Scientist	:	Dr.G.S.Venkataraman, Joint Director (Research) Indian Agrl.Res.Institute,New Delhi
Crop Farmer	:	Thiru K.G.Krishnamurthy
Livestock Farmer	:	Thiru A.Balasubramanian,B.A.B.L.
Agro-Industries	:	Dr.B.V.David
Women Social Worker	:	Sr.Rita Thyveettil
Educationist	:	Dr.K.R.Ramaswamy
Nominee of the ICAR	:	Dr.S.Nagarajan Asst.Director General
Member of Legislative Assembly	:	-
Member of Legislative Council	:	-
Member-Secretary	:	Dr.A.Narayanan Registrar

Meeting of the Board of Management

During the year 1989-90, the Board of Management met thrice on 31.5.1989, 26.8.1989 and 23.12.1989.

The following were some of the important decisions taken by the Board of Management at these meetings.

Research and Education

1. Approved the Rules for honouring National Awardees among the TNAU Scientists.
2. Approved the formation of a separate Board of Studies for the Faculty of Forestry.
3. Approved the transfer of State Horticultural Farm at Pechiparai to the Tamil Nadu Agricultural University from Department of Horticulture and Plantation Crops.

The Board also considered and approved the implementation of the following schemes.

1. Scheme for Response of Major Surface Irrigation System to Drought at Water Technology Centre, Coimbatore.
2. PL.480 Scheme - Development and use of indigenous microbial pathogens for the control of **Heliothis armigera** and **Spodoptera litura** in Department of Agrl.Entomology,Coimbatore.
3. A study of Transfer of Agricultural Technology and Dynamics of Information Flows within the Technology Sector at CARDS,Coimbatore.
4. IFPRI scheme entitled "Modelling in Irrigation Investment".
5. Rural Infrastructure and Agricultural Growth in Collaboration with International Food Policy Research Institute.
6. Government of India, Department of Bio-Technology Scheme for Establishment of Pilot Plants for mass production of **Trichogramma** and **Chrysopa** and field studies with genetically improved strains.
7. Government of India Scheme - Microbiology of methane production from cattle dung, human waste, piggery waste and sago industry effluent at Department of Agrl.Microbiology, Coimbatore.
8. Government of India, Department of Bio-technology-Scheme on biological control of root rot disease of pulses and oilseeds and mass multiplication of antagonists at Department of Plant Pathology, Coimbatore.
9. Government of India Scheme for increasing the bio-mass of forest tree species by the use of mycorrhizal fungi at Department of Plant Pathology, Coimbatore.
10. Government of India, Department of Bio-technology-Scheme on Biological control of insect pests through Bio-technology.
11. ICAR Scheme-Development of methods for management of virus diseases of greengram and blackgram at Department of Plant Pathology, Coimbatore.

12. ICAR Adhoc scheme - On - farm Water Management Studies, Pilot Project at Agrl.Research Station, Bhavanisagar.

13. Use of microbial processes for restoration of shola forests in Nilgiris at Horticultural Research Station,Vijayanagaram.

14. Establishment of a Research Station at Palur as Vegetable Research Station, Palur.

15. Starting of a new Agricultural College at Kumulur in Lalgudi Taluk of Tiruchirapalli district.

16. Revival of the Part-time studies by staff leading to Ph.D. degree.

17. Ford Foundation Scheme - Training rural women in entrepreneurial development for production of edible mushroom in various centres of the TNAU.

18. Investigations on soil and water resources for maximising sugarcane production in Sivaganga area of Sakthi Sugars Limited.

19. Central sector scheme - Production of Seeds of Fruits and Vegetables at various centres of TNAU.

20. Government of India Scheme - Nitrogen fixation and carbon assimilation in stem nodules of **Sesbania rostrata.**

21. National Watershed development programme for Rainfed Agriculture (NAWPRAG) in Dharmapuri district.

22. Studies on the development of practical technology for Azolla sporocarp production at Coimbatore.

23. State Bank of India supported scheme on studies on Rural Development in Coimbatore.

24. Collaborative Research Project between the TNAU and University Catholique, De Louvain, Belgium for a period of five years.

25. ICAR Scheme on Isolation and characterisation of microbial products involved in stable soil aggregation in Coimbatore.

26. NARP-Project-Establishing a Regional Research Station at Pechiparai with sub-station at Thirupathisaram under NARP Phase-II for four years.

27. Adaptive Research on Sugarcane Seed Sett Production at Sugarcane Research Station, Cuddalore for a period of four years.

Administration

The Board approved the following :

1. Approved the Government order for adoption regarding the reservation of seats in the Government Public Services in TNAU.

2. Approved the Government order for implementation in the University regarding the enhancement of age limit from 28 years to 30 years in respect of recruitment to entrance level posts.

3. Approved the Government order regarding the fixation of pay to the Vice-Chancellor, TNAU,Coimbatore.

4. Approved the proposal on the procedure of elevation of teachers on Career Advancement as contemplated in Government order.

5. Approved the deputation of Thiru G.Kumaravelu,I.F.S., as Dean, Faculty of Forestry, TNAU, Coimbatore.

6. Approved for taking over an area of 20 acres of land from Department of Agriculture at Vaigai Dam for producing breeder seed production.

7. Approved the Government order for implementing the V Pay Commission scales of pay to the Non-teaching staff of the TNAU.

8. Approved the creation of three new departments in the TNAU (i) Department of Environmental Sciences (ii) Department of Plant Molecular Biology and Bio-technology and (iii) Department of Sericulture at Coimbatore.

9. Approved the creation of new units, viz., Rural Development, Agro-Industries, Plant Genetics Resources, Weed Science, Soil Resource Management, Medicinal Plants in the TNAU.

BUDGET

1. Approved the Government order regarding the accounting procedure and management of payments of receipts arising out of Government transactions from 1.4.1989.

2. Approved the Budget Estimate for 1989-90.

3. Approved the Balance sheet for the period from 1.4.1982 to 31.3.1987.

4. Approved the Eighteenth Annual Report of the TNAU for 1988-89.

5. Approved the payment of Revised Pension and Revised Dearness allowance for the pensioners of the TNAU consequent on the implementation of the V Pay Commission.

6. Approved the Government order for the payment of conveyance allowance to blind and ortho-paedicapped, State Government employees for implementation in the TNAU.

CIVIL WORKS

1. Construction of Professors' quarters (four units) at TNAU, Coimbatore under ICAR Development grant for Rs.6.00 lakhs.

2. Construction of laboratory buildings at Coconut Research Station, Veppankulam for Rs.4.00 lakhs.

3. Construction of a building complex for Rs.29.50 lakhs for various schemes in the Entomology Department of the TNAU.

4. Construction of various buildings at Agricultural College Kumulur, Tiruchirapalli district for Rs.29.12 lakhs.

5. Decided to entrust major part of the civil works in NARP funds costing more than Rs.4.00 lakhs to State Public Works Department.

6. Approved for the construction of Teachers' Hostel and Library Buildings for Rs.20 lakhs in connection with the Silver Jubilee celebrations at Agrl.College and Research Institute, Madurai.

7. Construction of various buildings under NARP Phase II programme in various zones for Rs.93.00 lakhs.

Education

1. The following new post-graduate degree programmes were started in the University :

   i. Post-graduate programme leading to M.Sc.(Forestry)

   ii. Post-graduate programme leading to M.Sc.(Environmental Sciences)

2. Establishment of separate College for Forestry.

3. Ph.D.Programme was started at the Agricultural College and Research Institute, Madurai in six disciplines, viz., Agronomy, Plant Breeding and Genetics, Soil Science and Agrl.Chemistry, Plant Pathology, Agricultural Entomology and Econometrics.

4. The Academic activities and infrastructural facilities at third Agricultural College and Research Institute, Killikulam, Tirunelveli district have been strengthened.

5. The Fourth Agricultural College at Kumulur, Lalgudi Taluk, Trichirapalli district has been established and started functioning from the academic year 1989-90.

Academic Council

Chairman

Vice-Chancellor	:	Dr.S.Jayaraj

Members

Special Commissioner and Secretary to Government, Agrl.Department & Agrl. Production Commissioner	:	Thiru M.Ragupathy,I.A.S. (upto 7.2.1990) Tmt.Latika D.Padalkar,I.A.S. (from 8.2.1990)

Commissioner & Secretary to Government, Agricultural Department	: Tmt.Latika D.Padalkar,I.A.S. (upto 7.2.1990)
Dean, Agrl.College & Research Institute, Coimbatore	: Dr.SP.Palaniappan
Dean, Post-graduate Studies, Coimbatore	: Dr.G.V.Kothandaraman
Dean, College of Horticulture, Coimbatore	: Dr.K.G.Shanmugavelu, (upto 30.11.1989)
	Dr.S.R.Sree Rangaswamy, Dean (Hort) i/c., (from 1.12.1989)
Dean, College of Agrl. Engineering, Coimbatore	: Prof.K.R.Swaminathan
Dean, Madras Veterinary College, Madras	: Dr.P.Richard Masillomoni (upto 19.9.1989)
Dean, Veterinary College & Research Institute, Namakkal	: Dr.P.Sadasivam (upto 20.9.89)
Dean, Agrl.College & Research Institute, Madurai	: D .T.S.Manickam
Dean, Agrl.College & Research Institute, Killikulam	: Dr.G.Soundarapandian
Director of Research, Coimbatore	: Dr.S.Chelliah
Director of Extension Education, Coimbatore	: Dr.N.Shanmugam
Director, School of Genetics, Coimbatore	: Dr.S.R.Sree Rangaswamy
Director, Centre for Agrl. and Rural Development Studies, Coimbatore.	: Dr.A.Kandaswamy
Director, Centre for Plant Protection Studies, Coimbatore.	: Dr.P.Vidyasekaran
Director of Water Technology Centre, Coimbatore.	: Dr.P.Kandaswamy
Director, Centre for Soil and Crop Management Studies, Coimbatore.	: Dr.S.Sankaran

Director of Research (Animal Science), Coimbatore	:	Dr.S.Shanmugasundaram (upto 17.4.1989)
Director of Animal Health, Madras	:	Dr.P.Mahalingam (upto 20.9.1989)
Director, Tamil Nadu Rice Research Institute, Aduthurai	:	Dr.A.Abdul Kareem
Six members among the Heads of Departments nominated by the Vice-Chancellor	:	1. Prof.K.R.Swaminathan Prof. & Head, Department of Bio-Energy, College of Agrl. Engineering, Coimbatore (upto 17.11.1988) Thiru R.Karunanidhi Prof. & Head, Dept.of Farm Machinery, College of Agrl. Engineering,Coimbatore (from 22.11.1989) 2. Dr.V.Meenakshisundaram, Professor and Head, Dept.of Agrl.Economics, Coimbatore (upto 21.11.1989) Dr.K.Mayalagu, Professor & Head, Dept.of Soil Science & Agrl.Chemistry, Agrl. College & Research Institute, Madurai (from 22.11.1989) 3. Dr.N.Raghavan, Professor and Head, Dept.of Preventive Medicines, MVC., Madras (upto 20.9.1989) Dr.(Tmt.) Sukanya Subramaniam, Professor and Head, Dept.of Agrl. Botany, Agrl.College & Research Institute, Madurai (from 22.11.1989) 4. Dr.V.Venkataramanujam, Professor and Head, Dept.of Fish Culture, Fisheries College, Tuticorin. (upto 20.9.1989) Dr.A.MohammedAli Professor and Head, Dept.of Agronomy & Soil Science and

Agrl.Chemistry, Agrl.College and Research Institute, Madurai. (upto 21.11.1989)

5. Dr.I.Irulappan, Professor and Head, Dept.of Horticulture, Agrl.College & Research Institute, Madurai. (upto 21.11.1989)

   Dr.JBM.Md.Abdul Khader, Professor and Head, Dept.of Floriculture and Plantation Crops, College of Horticulture, TNAU., Coimbatore. (from 22.11.1989)

6. Dr.V.Gnanaprakasam Professor and Head, Dept.of Therapeutics, MVC.,Madras. (upto 20.9.1989)

   Dr.T.V.Karivaratharaju, Professor and Head, Dept.of Seed Technology, Centre for Soil & Crop Management Studies, Coimbatore. (from 22.11.1989)

Three members having special knowledge or practical experience in different aspects of Agriculture, nominated by the Vice-Chancellor	:	1. Dr.J.Subbayya, Retd.Dean of Andhra Pradesh Agrl.University,Rajendranagar, Hyderabad (upto 21.11.1989)
		Dr.A.Alam, Asst.Director General(Agrl. Engg.), ICAR, Krishi Bhavan, New Delhi (from 22.11.1989)
		2. Dr.R.C.Maheswari, Project Co-ordinator, RES Scheme, Central Institute of Agrl. Engineering, Shri Guru Tegh Bahadur Complex, T.T.Nagar, Bhopal. (upto 21.11.1989)
		Dr.R.Yamadagni, Professor of Horticulture,Haryana Agrl.University, Hissar, Haryana State. (from 22.11.1989)

3. Dr.B.U.Rao, Joint Director, Indian Veterinary Research Institute, H.A.Farm, Hebbal, Bangalore. (upto 21.11.1989)

Dr.C.Sreedharan, Dean, College of Agriculture, Kerala Agrl.University, Vellayani, Trivandrum. (from 22.11.1989)

Member-Secretary : Dr.A.Narayanan Registrar.

Meetings of the Academic Council

The Academic Council met two times during the period under report. The following important decisions were taken.

1. Accepted the revised reservation policy of the Government of Tamil Nadu for implementation from the academic year 1989-90.
2. Accepted the proposal for dispensing of graduates quota admission to the undergraduate programmes.
3. Accepted the proposal for fixing of maximum age limit for the SC/ST, Tamilian Repatriates from Burma, Sri Lanka etc.
4. Accepted the proposal to adopt Physical Standards and Selection procedure prescribed by the Kerala Agricultural University in respect of B.Sc.(Forestry) degree programme.
5. Accepted the proposal to authorise the Deans Committee to permit the Postgraduate students to re-register the research credits for the third time.
6. Accepted the reallocation of three TNAU Merit Scholarships to the M.B.M. students leaving 30 nos. to the Agricultural Students out of the total sanctioned No.of 33 scholarships for Agricultural Faculty.
7. Accepted the increase in the number of seats reserved for the sons/daughters of farmers from the academic year 1989-90 for the B.Sc.(Ag) degree programme.
8. Accepted the Forest Stay Programme and All India Study Tour in the B.Sc.(Forestry) degree programme.
9. Approved equivalent courses for B.Sc.(Hort.) programme in the restructured syllabi 1988-89.
10. Accepted the revised minimum marks prescribed for backward classes and most backward class students for admission to professional courses from the academic year 1989-90.

11. Accepted the creation of a separate Department of Bioenergy, increasing the intake of candidates for Ph.D. Agrl.Engineering on part-time basis, introducing external registration system for Ph.D. in Agrl.Engineering, creating Ph.D.programme with specialisation in Bio-energy, and starting of M.E.(Ag) programme in Food and Dairy Engineering.

12. Accepted to increase the number of candidates on external deputation from 10 to 15.

13. Accepted the reallocation of TNAU Merit Scholarships to M.Sc. (Forestry) and M.Sc.(Environmental Sciences) from M.Sc.(Ag) course.

14. Accepted to establish six units viz. (1) Medicinal and Aromatic Plants at Agrl.College & Research Institute, Killikulam, (ii) Plant Genetic Resources at School of Genetics, Coimbatore (iii) Agro Industries in College of Agrl.Engineering (iv) Rural Development in the Directorate of CARDS (v) Weed Science in the Directorate, Soil & Crop Management Studies (vi) Soil Resources Management at Agrl.College & Research Institute, Madurai.

15. Accepted the donation from M/s.Southern Petro-Chemicals Corporation, Madras for the creation of an endowment entitled "Spic Endowment Fund in Bio-technology for conducting Guest Lectures".

16. Approved the rules for the award of Chief Guest Thiru C.Subramaniam Prize for M.B.M. Student, Special Guest Dr.M.S.Swaminathan Prize for M.Sc.Bio-technology student and Pon Esakkia Pillai Gomathiammal Medal for III Year B.Sc.(Ag) student of Agrl.College and Research Institute, Killikulam and Dean(Hort.) Dr.K.G.Shanmugavelu Gold Medal for the Best Ph.D.Thesis in Horticulture.

17. Accepted the new procedure to give I.D.Nos. to the under graduate students of Tamil Nadu Agrl.University.

18. Accepted to confer Doctor of Science **(Honoris Causa)** Degree on Dr.S.Krishnamurthi, former Dean, Agrl.College and Research Institute, Coimbatore and Dr.S.Ramachandran, Secretary DBT Government of India, New Delhi.

Board of Studies

The Board of Studies in Agriculture, Agricultural Engineering, Veterinary and Animal Science, Horticulture and Fisheries Science continued during the period under report. Each Board of Studies was constituted with the following members.

1. Dean of the Faculty
2. Other Deans within the Faculty
3. Heads of Departments of the concerned Faculty

4. All the Professors of the Faculty

5. Two elected representatives from among the Associate Professors and four from among the Assistant Professors.

6. *Two experts in the concerned subjects from outside the University nominated by Vice-Chancellor.*

Two new Board of Studies viz., Board of Studies, Post-graduate Studies and Board of Studies, Faculty of Forestry were constituted during the year under report.

1. Post-graduate studies

1.	Dean, Post-graduate Studies	: Chairman
2.	Registrar, Deans and Directors in all Faculties	: Members
3.	One Professor representing from each Faculty of Agriculture, Horticulture, Veterinary and Animal Sciences, Agrl. Engineering and Fisheries nominated by the Vice-Chancellor.	
i.	Dr.M.Stephen Dorairaj, Professor of Agrl.Botany, School of Genetics, TNAU, Coimbatore.	: Faculty of Agriculture
ii.	Dr.R.Arumugam, Professor of Horticulture, Department of Pomology, Faculty of Horticulture, TNAU, Coimbatore.	: Faculty of Horticulture
iii.	Dr.R.Kadirvel, Professor and Head, Dept.of Animal Nutrition, Madras Veterinary College, Madras	: Faculty of Veterinary and Animal Science
iv.	Prof.R.Manian, Professor and Head Zonal Research Centre College of Agrl.Engineering, TNAU., Coimbatore.	: Faculty of Agricultural Engineering
v.	Dr.K.Venkataramanujam Professor and Head, Dept.of Fishery Biology, Fisheries College, Tuticorin.	: Faculty of Fisheries Science

4. Two outside experts nominated by the Vice-Chancellor

   a. Dr.R.K.Hegde,
   Director of Instruction (P.G.Studies),
   University of Agricultural Sciences,
   Krishi Nagar,
   Dharwar - 580 005.

   b. Dr.A.Ram Mohana Rao,
   Dean (PGS), Andhra Pradesh
   Agricultural University,
   Rajendra Nagar,
   Hyderabad - 500 030.

The Board of Studies met once during the year under report and recommended the following to the Academic Council.

1. Revival of M.Sc.(Ag) Programme in Plant Nematology
2. Admission of B.Sc.(Forestry) students in other M.Sc.(Ag) degree programmes
3. Starting of M.Sc.(Forestry) degree programme with an intake of ten students.
4. Starting of the Faculty of Forestry and formation of Board of Studies (Forestry).
5. Starting of Ph.D. programme in Fisheries Sciences.
6. Revival of Ph.D. programme in Veterinary Anatomy.
7. Increasing the intake of I.D. candidates in Ph.D. in Agricultural Engineering.
8. Recognition of the Central Institute of Dryland Agriculture, Hyderabad for Ph.D. programme.
9. Reregistration of Research credits for the third time.

2. Faculty of Agriculture

A separate Board of Studies, consisting of the following members has been formed for the Faculty of Agriculture.

Associate Professors

1. Dr.K.Ramaswamy,
   Department of Microbiology
   Tamil Nadu Agrl.University
   Coimbatore.3.
   (From 26.3.1988 to 25.3.1991)

2. Dr.M.Govindaswamy,
   Associate Professor (Soil Science)
   Anbil Dharmalingam Agrl.College,
   Kumulur
   (From 26.3.1988 to 25.3.1991)

Assistant Professors

1. Thiru P.Paramasivam,
   Dept.of Soil Science & Agrl.Chemistry
   Agrl.College & Research Institute
   Coimbatore.
   (From 26.3.1988 to 25.3.1991)
2. Thiru S.Chellamuthu,
   Dept.of Horticulture
   Horticultural Research Station
   Pechiparai
   (From 26.3.1988 to 25.3.1991)
3. Thiru C.Natarajan,
   National Pulses Research Centre
   Vamban.
   (From 26.3.1988 to 25.3.1991)
4. Thiru I.Mohamed Iqbal,
   Directorate of CARDS
   Dept.of Agrl.Extension and Rural Sociology
   Coimbatore.
   (From 26.3.1988 to 25.3.1991)

Nominated Members

1. Dr.M.M.Koshy,
   Dean, College of Agriculture
   Vellayani
   Trivandrum
   (From 26.3.1988 to 25.3.1991)
2. Dr.M.Sugunakar Reddy,
   Principal,
   College of Agriculture
   Rajendranagar
   Hyderabad
   (From 26.3.1988 to 25.3.1991)

The Board of Studies met once during the year under report and recommended the following to the Academic Council.

1. Sending of Post-graduate scholars of TNAU to Internation Rice Research Institute and other foreign countries for the research on collaborative basis.

2. Consideration of maximum limit to complete the under-gradua programme as 10 years (i.e., 4 + 6).

3. Registration of Diploma holders at TNAU students Counselli Centres.

3. Faculty of Veterinary and Animal Sciences

Associate Professors

P.RangaReddy
Dept.of Poultry Science
VeterinaryCollege & Research
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Dr.B.Murali Manohar
Veterinary College & Researc
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Assistant Professors

Dr.B.Mohan
Veterinary College & Research
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Dr.P.Sriram
Veterinary College & Resear
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Dr.K.Nanjappan
Veterinary College & Research
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Dr.K.Kulasekaran
Veterinary College & Researc
Institute, Namakkal.
(From 20.1.89 to 19.1.91)

Nominated Members

Dr.Krishnan Nair,
Director of Veterinary
Education and Research,
Kerala Agrl.University
Mannuthy
Trichur 680 001.
(From 20.1.89 to 19.1.91)

Dr.D.Anjanaya Prasad
Dean of Veterinary Faculty
Andhra Pradesh Agrl.Universit
Rajendranagar,
Hyderabad 500 030.
(From 20.1.89 to 19.1.91)

The Board of Studies met once during the year under rep and recommended the following to the Academic Council.

1. Formation of Animal Bio-Technology Unit at Madras Veterin College Campus.

2. Introduction of "Earn While You Learn Scheme"

3. Change of Nomenclature of the Department of Therapeutics as Department of Clinical Medicine and Therapeutics.

4. Adoption of Village by NCC Wing and Extension Department under Rural Development Cell.

5. Farm Training for the final B.V.Sc. students during Intership period.

4. Faculty of Agrl.Engineering

Associate Professors

Thiru M.Kotteeswaran
Dept.of Soil & Water Conservation
College of Agrl.Engineering
TNAU., Coimbatore.
(From 26.3.88 to 25.3.91)

Dr.M.Balasubramaniam
Dept.of Agrl.Processing
College of Agrl.Engineering
TNAU.,Coimbatore.
(From 26.3.88 to 25.3.91)

Assistant Professors

Thiru M.Singaravelu
Dept.of Agrl.Processing
College of Agrl.Engineering
TNAU.,Coimbatore.
(From 26.3.88 to 25.3.91)

Thiru D.Palaniswamy
Dept.of Soil & Water
Conservation, College of Agrl.
Engineering, TNAU.,Coimbatore.
(From 26.3.88 to 25.3.91)

Thiru K.Shanmugasundaram
Dept.of Agrl.Engineering
Agrl.College of Research
Institute, Madurai.
(From 26.3.88 to 25.3.91)

Thiru C.Divakar Durairaj
Dept.of Farm Machinery
College of Agrl.Engineering
TNAU.,Coimbatore.
(From 26.3.88 to 25.3.91)

Nominated Members

Dr.Anwar Alam
Asst.Director General(Engg.)
Indian Council of Agrl.
Engineering, Krishi Bhavan,
New Delhi 110 001.

Dr.G.T.Kurup
Senior Scientist
Central Tuber Crops Research
Institute, Sree Kariyam,
Trivandrum 695 017.

The Board of Studies met once during the year under report and recommended the following to the Academic Council.

1. Creation of a separate Department of Bio-Energy.
2. Introducing external registration system in Ph.D.(Agrl.Engg.).
3. Institution of prize for the project work to undergraduate students of Final B.E.(Ag.) in each department.
4. Starting Ph.D. programme in Bio-energy.

5. Faculty of Horticulture

Associate Professors

Dr.C.M.P.Pappiah
Dept.of Horticulture
Agrl.College & Research Institute
Madurai.
(Upto 23.1.1991).

Assistant Professors

Thiru M.Kannan
College of Horticulture
TNAU., Coimbatore.
(Upto 23.1.1991).

Thiru N.Selvarajan
Agrl.College & Res.Institute
Killikulam.
(Upto 23.1.1991).

Thiru N.Chezhiyan
Faculty of Horticulture
Horticultural Research Station
Periyakulam.
(Upto 23.1.1991)

Thiru S.Jayasankar
Horticultural Research Station
Periyakulam.
(Upto 23.1.1991).

Nominated Members

Dr.M.Aravindakshan
Director of Research
Kerala Agrl.University
Vellanikara.
(Upto 23.1.1991).

Dr.U.G.Nalawadi,D.S.W.
University of Agrl.Sciences
Dharwar
(Upto 23.1.1991).

The Board of Studies met once during the year under report and recommended the following to the Academic Council.

1. Approval of the Forest Stay Programme and All India Study Tour in the B.Sc.(Forestry) degree programme.
2. Approval of equivalent courses for B.Sc.(Hort.) programme in the restructuredsyllabus 1988 - 89.

6. Faculty of Fisheries

Associate Professors

Dr.P.Selvaraj
Fisheries College
Tuticorin.
(From 29.1.1988 to 28.1.1991)

Dr.R.Santhanam
Fisheries College
Tuticorin.
(From 29.1.1988 to 28.1.199

Assistant Professors

Dr.B.Srikrishna Dhas
Fisheries College, Tuticorin.

Dr.N.Sukumaran
Fisheries College,Tuticorin.

Dr.P.Gopalakrishnan
Fisheries College, Tuticorin.

Dr.V.K.Venkataramani
Fisheries College, Tuticorin.

Nominated Members

Prof.K.C.Bose
Dean, Fishery Engineering
College of Fisheries
Orissa University of
Agriculture & Technology

Dr.T.J.Varghese,
Professor
College of Fisheries
University of Agrl.Sciences
Bangalore.

The Board of Studies met once during the year under report and recommended the following to the Academic Council.

1. Introducing a new course in Bio-technology.
2. Introducing Project Work for fourth B.F.Sc.students.

7. Faculty of Forestry

A separate Board of Studies consisting of the following members has been formed for the Faculty of Forestry with effect from **11.12.1989.**

1. Dean (Forestry)	:	Chairman
2. Deans of other Faculties and all Deans and Directors in the Main Campus.	:	Members
3. Registrar	:	Member
4. All Professors of Forestry Faculty	:	Member

5. **Associate Professors** (Elected Members)

1. Dr.R.Jambulingam
Associate Professor
Forestry Research Station
Mettupalayam.

2. Dr.R.Stephen V.Rai
Associate Professor
Forestry Research Station
Mettupalayam.

6. **Assistant Professors** (Elected Members)

1. Thiru K.K.Suresh
Assistant Professor
Forestry Research Station
Mettupalayam.

2. Thiru K.Sivagnanam
Assistant Professor
Forestry Research Station
Mettupalayam.

7. **Two outside experts nominated by the Vice-Chancellor :**

1. Dr.S.Chinnamani
   Assistant Director General (Agro-Forestry)
   Indian Council of Agricultural Research
   Krishi Bhavan
   New Delhi 110 001.
2. Dr.T.C.Ramakrishna
   Deputy Conservator of Forests (Retired)
   90, Tatabad, Street No.11
   Coimbatore - 641 012.

Recognition Committee

The recognition committee met twice during the year under report and recommended the following to the Academic Council.

1. Considered the recognition of the B.Sc.(Forestry) degree of Kerala Agricultural University and B.Sc.(Forestry) of University of Agricultural Sciences, Bangalore for the purpose of admission to Postgraduate degree programme and employment purposes.

2. Considered the recognition of M.Sc.Fisheries Management offered by CIFE (ICAR) and awarded by the Bombay University for the purpose of admission to Ph.D.programme in Fisheries Science in Tamil Nadu Agricultural University.

3. Considered the recognition of the Bachelor of Science in Agriculture awarded by Addis Ababa University, Ethiopia and Alemaya University of Agriculture, Ethiopia for admission to postgraduate programme in Tamil Nadu Agricultural University.

4. Considered the recognition of B.Tech.(Agrl.Engg.) degree awarded by the Punjab Rao Krishi Vidyapeeth, Akola, Maharashtra for admission to M.E.(Ag) in Tamil Nadu Agricultural University.

5. Considered the recognition of B.Sc.(Ag) degree of Bidhan Chandra Krishi Viswa Vidyalaya ,Kalyani, Nadia, West Bengal for the purpose of admission to Post-graduate programme of this University.

6. Approved the recognition of M.Sc.(Ag.) Economics of Allahabad University and M.V.Sc.of Kerala Agrl.University for purpose of admission to the Ph.D. degree programme in Tamil Nadu Agricultural University.

Courses and Curricula

The trimester system of education was followed for the undergraduate and postgraduate degree programmes and Ph.D.programmes of all discipline in the University.

A total number of 10,885 application forms for the degree courses in Agriculture, Horticulture, Veterinary Science, Agricultural Engineering and Fisheries and 28 application for B.Sc.(Home Science) were received.

With regard to postgraduate programme, 953 applications for Masters Degree Programme, 50 applications for P.G.diploma course and 412 applications for doctoral degree programme were received. Selections for the postgraduate programmes were made after interviewing the candidates by the different selection committee appointed by the Vice-Chancellor.

During the year under report, details of enrolment and outturn in different degree programmes are furnished below:

Undergraduate

Name of the degree programme	No.of students admitted	No.of students passed out
B.Sc.(Ag)	323	363
B.Sc.(Hort)	47	53
B.V.Sc.	194	7
B.E.(Ag)	80	73
B.Sc.(Home Science)	10	14
B.F.Sc.	14	11
B.Sc.(Forestry)	15	17
Total	683	538

Postgraduate

Name of the degree programme	No.of students admitted	No.of students passed out
M.Sc.(Ag)	170	170
M.Sc.(Hort)	14	10
M.E.(Ag)	14	3
M.Sc.(Food Science)	5	3
M.Sc.(Biotechnology)	12	-
M.Sc.(Environmental Science)	5	-
M.Sc.(Forestry)	5	-
M.F.Sc.	10	5
M.B.M.	10	-
Total	245	191

Postgraduate Diploma in Sericulture	4	8
Ph.D.(Agriculture)	92	65
Ph.D.(Horticulture)	10	10
Ph.D.(Agrl.Engineering)	8	-
Total	110	75

The Semester system of education was followed in the affiliated institutions of Tamil Nadu Agricultural University offering Diploma courses in Agriculture.

Details of Scholarships awarded during the year under report

M.Sc.(Ag) and Ph.D.Programmes

Name of the Scholarships/ Fellowship	No.of person	Amount Rs.	Period
1. M/s.Indofil Chemical Co., Bombay	1	25,600	2 years
2. Pest Control India Ltd., Bombay	1	25,000	2 years
3. Tuticorin Alkali Chemicals and Fertilizer Limited, Madras	1	25,000	2 years
4. Pyrites phosphate and Chemicals Ltd., New Delhi	2	30,800	2 years
5. Potash Research Institute of India Ltd., New Delhi	1	12,000	2 years
6. Ponds India Ltd., Madras	1	27,000	2 years
7. Gharuda Chemicals Limited, Bombay	3	30,500 38,800 40,800	2 years
8. Government of India Scholarship for M.Sc.(Bio-Technology)	12	19,200	2 years
9. M/s.Potash Phosphate Institute of Canada	1	14,480	2 years

* Farmers' day at Rice Research Station, Ambasamudram. February 2,1990.

* One day seed certification training for departmental officers at Aduthurai. February 2,1990.

* Farmers' day at National Pulses Research Station, Vamban. February 3,1990.

* Farmers' day at Regional Research Station, Paiyur. February 28, 1990.

* Farmers' day at Agricultural College and Research Institute, Killikulam. March 8,1990.

* Farmers' day at Tamil Nadu Rice Research Station, Aduthurai. March 24,1990.

Important Events

* Thiru Ko.Si.Mani, Hon'ble Minister for Agriculture, Govt.of Tamil Nadu laid the foundation stone for construction of a screen house at AC&RI, Madurai on July 17,1989.

* Inaugural function of the students' club, Agrl.College and Research Institute, Madurai was celebrated on July 17,1989. Dr.S.Jayaraj, Vice-Chancellor presided and released the **"TRIUMPH"** magazine.

* Adipattam Campaign was inaugurated by Dr.S.Jayaraj, Vice-Chancellor, on July 19,1989 in the TNAU main campus, Coimbatore The campaign was jointly organised by Krishi Vigyan Kendra, Coimbatore and Rotary Club of Coimbatore City.

* Students' club inaugural function was celebrated on October 10, 1989 at Anna Aditorium, Tamil Nadu Agricultural University, Coimbatore. Dr.S.Jayaraj, Vice-Chancellor, TNAU presided and Dr.K.M.Marimuthu, Vice-Chancellor, Bharathiyar University, Coimbatore delivered the inaugural address.

* International Womens' Day was celebrated on December 4,1989 at the Directorate of Extension Education, Coimbatore.

* The Hon'ble minister for Agriculture, Government of Tamil Nadu, Thiru Veerapandi Arumugam declared open the laboratory complex and Guest House on January 1,1990 at Forest Research Station, Mettupalayam. He also laid the foundation stones for the construction of residential building, trainees hostel and auditorium.

* Dr.M.S.Swaminathan, President, International Union for conservation of Nature and Natural Resources inaugurated the new Department of Environmental Biology at TNAU., Coimbatore on January 10,1990.

* Dr.A.K.Sharma, Professor, Calcutta University, inaugurated the new department of Molecular Biology and Biotechnology at TNAU, Coimbatore on January 13,1990.

* Muthamizh Vizha was celebrated at AC and R.I.,Killikulam during February 5-7,1990. Students from 16 colleges from all over the southern districts participated.

* National Science Day was celebrated on February 28,1990 at Tamil Nadu Agricultural University, Coimbatore.

Important Visitors

* Thiru K.P.Kandasamy, Hon'ble Minister, Hindu Religious and Cultural Endowments and Forests visited the Forest Research Station, Mettupalayam on April 22,1989.

* Mr.Nerun Komvongsah, Minister for Agriculture, Bankok, Thailand visited the Forest Research Station, Mettupalayam on April 23,1989.

* Mr.Nerun Komvongsah and Mr.Thavatchai Worasan from the Department of Agricultural Extension, Government of Thailand, Bankok visited the Directorate of Extension Education, TNAU,Coimbatore on April 24,1989.

* Hon'ble MOH Farroghe, Chief Minister of Pondicherry visited the Horticultural Research Station,Yercaud on June 30,1989.

* Dr.M.S.Swaminathan, President, International Union for conservation of Nature of Natural Resources visited TNAU., Coimbatore on August 15,1989.

* Dr.M.V.Rao, Special Director General and Dr.R.S.Paroda, Deputy Director General, ICAR visited the School of Genetics, TNAU., Coimbatore, on August 18-19,1989.

* Dr.G.Gousalas, Maize Specialist, CIMMYT and Dr.N.N.Singh, Project Coordinator (Maize) visited School of Genetics, TNAU., Coimbatore on September 9,1989.

* Dr.Nyugen Zhu, Director, Cotton Research Centre, Vietnam visited the Agricultural Research Station, Bhavanisagar on November 15,1989

* Dr.Reza Valizodesh, Professor, Department of Animal Sciences, Ferdowsi University of Mashbad, School of Agriculture, Mashbad, Iran visited TNAU on November 21,1989.

* Hon'ble Minister for Agriculture, Govt.of Tamil Nadu Thiru Ko.Si. Mani visited TNAU on November 30,1989.

* Dr.I.R.Denton, Senior Research Adviser, International Jute Organisation, Dhaka, Bangladesh and Dr.S.L.Basak, Director, General Research Institute for jute and allied fibres, West Bengal visited the main campus on February 16,1990 and held discussions for strengthening of research on Jute and Mesta at Coimbatore.

* Dr.Erick Danfors, Royal Institute of Technology, Stockholm, Sweden; Thiru D.Jha and Dr.Mark Svensen, IFPRI, Washington, D.C., U.S.A.; Dr.Penning de Veries, IRRI, Manila, Philippines; and Dr.John Skutsch, Engineer, Hydraulic Research, U.K., visited the Water Technology Centre, TNAU., Coimbatore.3.

* Dr.Antony Bottral, Ford Foundation, U.S.A.; Dr.Sudhir Wanmali, Dr.Prakasam and Miss.Ruth Suseela, IFPRI visited the Centre for Agricultural and Rural Development Studies, TNAU., Coimbatore.

FOREIGN VISITS

Foreign visits by the faculty members of Tamil Nadu Agricultural University during 1989-90.

Sl. No.	Name and Designation of Scientists	Country visited	Period	Purpose
1.	Thiru K.Viswanathan, Asst.Prof.(Agrl.Proc.) , CAE, TNAU.,Coimbatore.	Manila, Philippines	17.4.89 to 12.5.89	Training Programme on Post Harvest Tech.
2.	Dr.S.Chelliah Director of Research TNAU.,Coimbatore.	Thailand	1.5.89 to 5.5.89	To participate in the Workshop on Simulation of Insect Damage in Rice.
3.	Thiru N.Raju, Assistant Professor TRRI.,Aduthurai.	Thailand	1.5.89 to 5.5.89	Workshop on Simulation of insect damage on rice.
4.	Dr.M.Govindarajulu, Associate Professor VC&RI.,Namakkal.	U.K.	Six months from 6.5.89	Training in Meat Species Identification Technique at U.K.
5.	Dr.P.Kandaswamy Director, WTC, TNAU.,Coimbatore.	Sweden	18.6.89 to 24.6.89	To Visit Royal Instt. of Technology Sweden.

6.	Dr.G.S.Thangamuthu, Professor of Agronomy TNAU., Coimbatore.	SriLanka	26.6.89 to 29.6.89	To participate on Management of acid soils for Rice Production in India.
7.	Dr.K.Palanisami Assoc.Professor WTC.,TNAU., Coimbatore.	Netherlands	3.7.89 to 9.7.89	To prepare a Collaborative project between IRRI, CABO, and TNAU.
8.	Dr.K.Venkataramanujan, Professor and Head Dept.of Fishery Biology, FC., Tuticorin.	Southampton, England	10.7.89 to 14.7.89	5th International Conference on Coelenterate Biology,1989.
9.	Thiru P.Subramaniyan Assistant Professor (Agrl.Microbiology), TNAU.,Coimbatore.	China	19.7.89 to 3.8.89	International Training Course in Azolla.
10.	Dr.C.Ramasamy Professor of Agrl. Economics, TNAU., Coimbatore.	Manila, Philippines	21.7.89 to 20.9.89	IRRI Project on Differential Impact of Modern Rice Technology.
11.	Dr.P.Paramasivam Asst.Professor (Agrl.Econ),TNAU., Coimbatore.	-do-	-do-	-do-
12.	Dr.A.Kandasamy Director,CARDS, TNAU.,Coimbatore.	-do-	-do-	-do-
13.	Dr.M.Jayaprakasam, Assoc.Professor of Bio-Chemistry, TNAU, Coimbatore.	New York, U.S.A.	23.7.89 to 30.7.89	Rockefeller Foundation, RFLP Technique Training course.
14.	Thiru R.Rajasekaran Assoc.Professor School of Genetics, TNAU.,Coimbatore.	U.S.S.R.	30 days in July August 1989	Joint Research on breeding and seed production of

			sunflower under Indo-Soviet programme.
15. Dr.SP.Palaniappan Dean(Agri),AC&RI, TNAU.,Coimbatore.	Thailand	20.8.89 to 1.9.89	International Network on soil fertility and sustainable rice farming.
16. Dr.K.Vanangamudi, Assoc.Professor ARS.,Bhavanisagar.	USA	One year from Aug.89.	Training programme under USAID in the field of tree crop seed Tech.and Management
17. Dr.S.Thangavelu, Professor and Head RRS.,Vridhachalam.	Egypt	9.9.89 to 15.9.89	Sub net work meeting in Egypt.
18. Dr.K.T.Radhakrishnan Assoc.Professor Dept.of Meats, MVC.,Madras.	U.K.	3 months from Sept.89	Training in Meat Species Identification Technique.
19. Dr.S.Chelliah Director of Research TNAU.,Coimbatore.	Bangladesh Thailand Philippines	1.10.89 to 14.10.89	International net work for Genetic Enhancement of Rice, Co-ordinated by IRRI.
20. Thiru B.Manimaran, Asst.Professor Fisheries College, Tuticorin.	Yugoslavia	9.10.89 to	VIII International disposa Ocean symposium.
21. Dr.R.M.Panchanathan, Assoc.Professor WTC.,TNAU., Coimbatore.	U.K.	Six months from 8.1.90	Training course on Irrigation Water Management

22.	Thiru G.Kumaravelu, Dean,College of Forestry, TNAU., Coimbatore.	Cairo, Egypt	15.1.90 to 24.1.90	II Internation - al seminar on Casuarina
23.	Dr.R.Stephen Vinai Rai, Assoc.Professor Forestry Res.Station Mettupalayam.	-do-	-do-	-do-
24.	Dr.M.Gulam Dasthagir Assoc.Professor FRS.,Mettupalayam.	-do-	-do-	-do-
25.	Dr.S.Thangavelu Professor & Head RRS.,Vridhachalam.	Neirobi Kenya	21.2.90 to 23.2.90	To attend Steering Committee Meeting of Oil crops net work.
26.	Thiru S.Kamaraj Assoc.Professor CAE.,TNAU., Coimbatore.	Syria	One month in Feb. March 90	For setting up of facilities for production of bio-energy.
27.	Dr.V.Narasimhan, Professor of Plant Pathology,TRRI, Aduthurai	Manila Philippines	19.2.90 to 30.3.90	IIIrd International Simulation and system analysis for rice project.
28.	Thiru S.Mohandass Asst.Professor (Crop Phy),ADAC, Kumulur.	-do-	-do-	-do-
29.	Thiru S.Ramasamy Asst.Prof.(Agronomy) SCMS,TNAU., Coimbatore.	-do-	-do-	-do-
30.	Thiru M.Selvarajan Asst.Professor(Engg.) ARS., Bhavanisagar.	-do-	-do-	-do-
31.	Dr.T.M.Thiyagarajan Assoc.Professor TRRI., Aduthurai.	-do-	19.2.90 to 16.3.90	-do-

32.	Thiru K.Paramasivam Asst.Professor (Ag.Bot),TRRI, Aduthurai	Nether- lands	12.3.90 to 22.6.90	Training programme on Applied Plant Breeding at International Agrl.Centre.

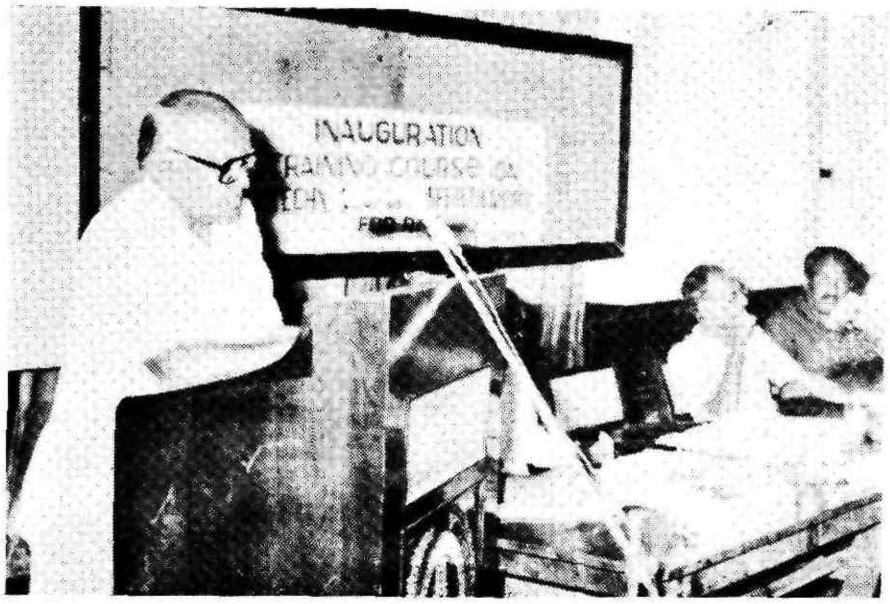
FINANCE AND ACCOUNTS

The following statement indicates the classified, summary of the transactions of the University during 1989-90.

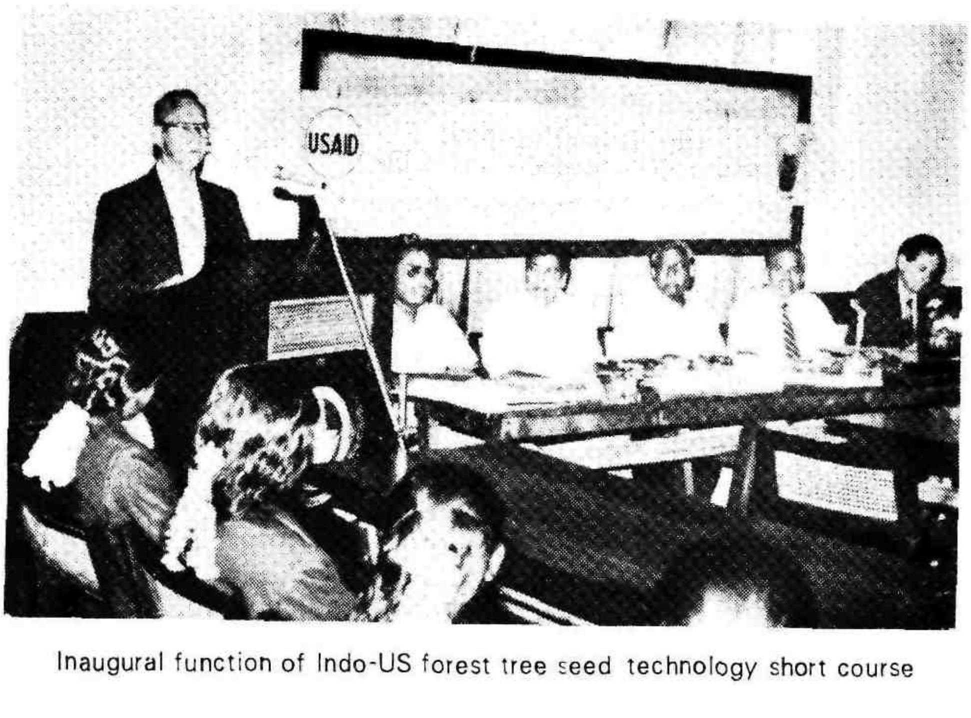
Details		Amount (Rupees in lakhs) Unreconciled and unaudited figures)
Opening balance as on 1.4.89	93.51	
Receipts		
Agriculture		
Non-Plan	879.00	
Plan	622.77	
Westernghat Dev.Scheme(Hort)	-	1595.28
ICAR Grant :		
ICAR (Fully financed) ICAR (Partly financed)	285.40	
Dev.Grant	19.32	304.72
For Agrl.Res.Schemes		137.35
Outside Agencies :		
Foreign and Indian Agencies		8.77
Res.Schemes		14.27
Other Receipts		
(Fee rent,farm receipts etc.) Agriculture)		221.01
State Government loan for house building		194.00
Total		2475.40

Dr. S. Jayaraj, Vice-Chancellor, TNAU, receiving "SUKUMAR BASU MEMORIAL AWARD" from Hon'ble Shri. Devi Lal, Deputy Prime Minister and Minister for Agriculture, Government of India

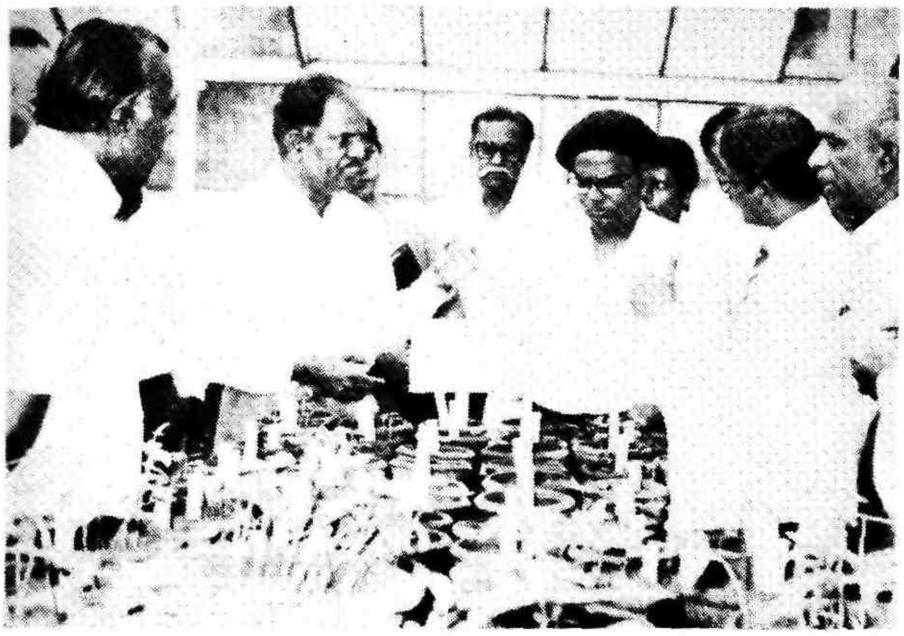
Hon'ble Minister for Agriculture Veerapandi Thiru. S. Arumugam discussing with the scientists at RRS, Paiyur



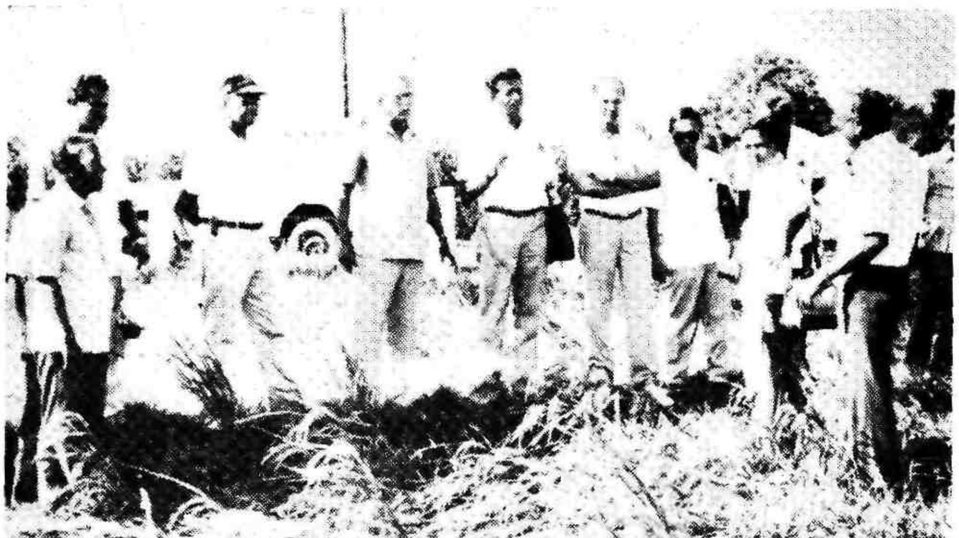
Inauguration of the training course on biotechnology of biofertilizers of rice by Dr. G. Rangaswamy, former Vice-Chancellor, TNAU



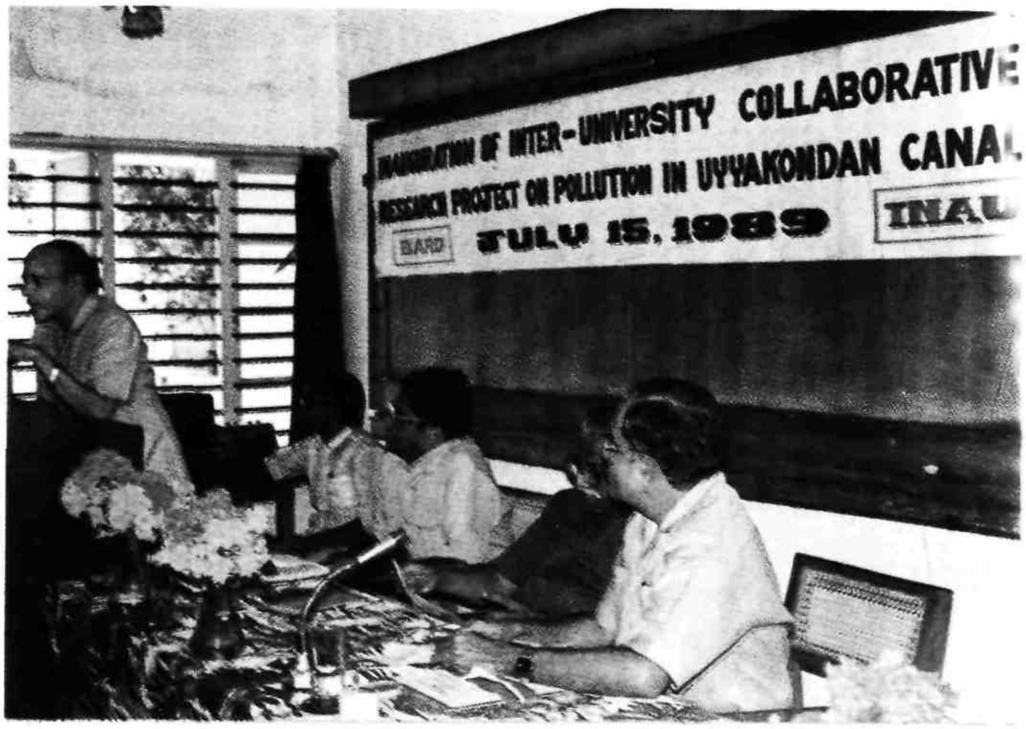
Inaugural function of Indo-US forest tree seed technology short course



Vice-Chancellor with Dr. H. K. Srivatsava, Project Co-ordinator,
Department of Biotechnology, Govt. of India



Scientists of Travelling Workshop on International Network for Genetic
Enhancement of Rice in a farmer's field at Anamalai



Inauguration of inter-university collaborative research project
Address by Dr. M. S. Swaminathan

Expenditure

1.	Agriculture Non-Plan	1084.48
2.	Agriculture Plan	638.30
	ICAR Fully financed Schemes	
	Agriculture	39.73
	ICAR Partly financed schemes	
	Agriculture	113.64
	Government of India Schemes	69.15
	Other Agencies	27.50
	ICAR Development Grant	49.44
	National Agrl.Res.Project	212.37
	Hill Area Development Programme	-
	House Building Advance	-
	Krishi Vigyan Kendra,Pondicherry	8.11
	Deposit Transaction including loans & advances	190.00
	Closing balance	42.68

The Finance Committee at its 36th meeting considered and recommended the budget estimate of 1989-90 of Tamil Nadu Agricultural University and recommended the estimate to the Board of Management. The annual audited accounts for the year 1987-88 has since been finalised. As the accounts for 1989-90 are yet to be compiled and sent to audit the figures furnished for the year 1989-90 will be treated as provisional.

University Budget Estimate for 1990-91

Annual financial estimate of Tamil Nadu Agricultural University has been observed for a gross appropriation of Rs.2628.77 lakhs including amounts from the ICAR, Govt.of India and other Agencies, loans and advances and deposit transactions.

In the budget estimate for 1990-91, a sum of Rs.1799.76 lakhs was fixed as net grant by the State Government for implementing various education, research and extension activities under Non-Plan and Plan. The grants from ICAR would be about Rs.271.13 lakhs including the implementation of ICAR development grants and NARP schemes. The grants expected from Government of India and other agencies are Rs.85.35 lakhs and 31.29 lakhs respectively. Further University receipts anticipated is Rs.244.33 lakhs approximately.

3. EDUCATION

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, COIMBATORE

Education

Dr.SP.Palaniappan continued as Dean (Agriculture) during this period. The Agricultural College and Research Institute, Coimbatore, continued to offer B.Sc.(Agri.) degree programme under the trimester system. The number of students on roll (boys and girls) in different years of the degree programme as well as the date of commencement of the first trimester of the 1989-90 academic year for the above students are furnished below :

Degree Programme	Year	Boys	Girls	Total	Date of commencement of I Trimester
B.Sc.(Ag)	I	30	93	123	12.9.89
	II	32	82	114	17.7.89
	III	68	66	134	5.6.89
	IV	68	76	144	12.6.89

Educational Tour

Study tours were conducted for the II Year and III Year B.Sc.(Ag.) students, under the courses AGR.205(0+1) and AGR.305(0+1) respectively. For AGR.205, a total number of 119 students registered the course and were taken in two batches to the following research stations between 21.1.90 and 27.1.90.

1. Kumaraperumal Farm Science Centre, Trichy.
2. Tamil Nadu Rice Research Institute, Aduthurai.
3. Krishi Vigyan Kendra, Pondicherry.
4. Horticultural Research Station, Yercaud.

They were exposed to the different agro-climatic situations besides taught about the existing cropping pattern, soil types, common cultivation practices and the local socio-economic conditions.

For AGR.305, a total number of 130 students registered the course and were taken in two batches to the following research stations located in the southern zone between 3.1.90 and 13.1.90.

1. Horticultural Research Station, Periakulam.
2. Cotton Research Station, Srivilliputhur.
3. Model Orchard, Courtallam.
4. Rice Research Station, Ambasamudram.
5. SPIC and Fisheries College, Tuticorin.
6. Regional Research Station, Kovilpatti.
7. Regional Research Station, Aruppukkottai.
8. Agricultural College & Research Institute, Madurai.
9. Tobacco Research Station, Vedasandur.

All India Study Tour

The All India Study Tour for the year 1989-90 was organised during February and March, 1990. A total number of 209 students of B.Sc.(Ag.) and B.Sc.(Hort.) classes participated in the tour. The students were taken in three batches accompanied by two teachers per batch. A total number of 155 students in Agriculture and 54 students in Horticulture participated in the tour in three batches. The tour was for a duration of 15 days. The students visited institutions related to Agriculture, Horticulture and Forestry in Madras, Bangalore, New Delhi, Jaipur, Agra and Dehra Dun.

Earn While You Learn

'Earn While You Learn' is an innovative scheme wherein the students were offered an opportunity to gain practical knowledge in cultivating crops like cotton and ragi in garden land and rice in wetland besides getting monetary return. During the year 1989, a total number of 177 students involved themselves in this scheme under the course AGR.301, AGR.302 and AGR.303. During these courses, they were given adequate opportunity to gain first hand information on the entire process of crop production technology. A total amount of Rs.24,500/- was distributed to the students as net income obtained from their plot working out to an average of Rs.138.42 per student. By this scheme, they were also offered an opportunity to handle different improved machineries like tractor-drawn puddler, inter cultivator, reapers and threshers.

Another scheme is also being organised for the production of coconut seedlings. A revolving fund of Rs.10,000/- was provided for this scheme. The first batch of students will complete their cultivation this year. The revenue from this scheme will be disbursed to the students. Similar schemes were in operation in mushroom spawn production, biofertilizer production and poultry. In mushroom spawn production, 22 students participated for 19 days and earned Rs.2025/-.

Village Stay Programme

The final B.Sc.(Ag.) students had undergone the one month Village Stay Programme from 14.12.89 to 13.1.90. The students (both boys and girls) numbering 157 were placed in 25 locations in the districts, viz., Periyar, Salem and Dharmapuri. They studied the socio-economic characters of the rural families, especially the farmers and learned the different methods of farming by closely associating and interacting with them. Identified TNAU staff members and the officials of the State Department of Agriculture and Horticulture were involved in guiding the students during the period of their stay. The students organised group meetings, exhibitions and conducted a number of method demonstrations on the latest agricultural techniques viz., Azospirillum treatment to millets, biological control of pests and diseases, mushroom cultivation, rat control, soil sampling, rhizobium inoculation, coir pith decomposition, parthenium control, seed hardening, etc. The students apart from organising agricultural activities also conducted tree planting campaigns and adult education programmes in villages. They have also enrolled farmers as subscribers for the TNAU journal Valarum Velanmai. All India Radio and Newspapers gave wide coverage of the one month programme of the students.

Scholarships

A number of scholarships were made available to the students. The following is the list of scholarships availed by the students.

Sl. No.	Name of the scholarship	No.of receipients	Total Amount Rs.
1.	SC Scholarship	51	1,55,237
2.	BC/MBC Scholarship	95	90,330
3.	National Merit Scholarship	19	24,480
4.	TNAU Merit Scholarship	20	17,215
5.	Gandhi Memorial Scholarship and Bright Students Award	9	8,720
6.	Pondicherry Post Metric Scholarship	7	23,692
7.	Andaman & Nicobar Administration Scholarship	3	4;166

Thousand one hundred and twenty six students including girls were accommodated in various hostels. Seven messes were functioning efficiently and economically on the basis of dividing system. The mess representatives nominated by the warden in consultation with the students ran the messes efficiently. Most of the academic requirements like record note books, herbarium sheets, papers etc., besides eatables and cosmetics for the students are supplied by the students canteen.

The University medical officer took care of the medical facilities of the inmates of the hostel. The lady medical officer was attending to the medical needs of girl students in Ladies' Hostel by visiting the hostels daily between 4.00 and 5.00 pm.

Students Club

Students club inaugural function was conducted at Anna Auditorium on October 10,1989. Dr.S.Jayaraj, Vice-Chancellor, TNAU presided and Dr.K.M.Marimuthu, Vice-Chancellor, Bharathiyar University, Coimbatore delivered the inaugural address.

The students participated in a number of literary events and competitions and brought out their talents in arts, photography, orational elegance, light music, etc.

"Universal Brotherhood Day" was celebrated in a grand manner on August 19,1989. Main campus students participated in "Harmony 89" organised by Coimbatore Institute of Technology.

Social Service League inaugural function was celebrated on November 3,1989 under the chairmanship of Dr.SP.Palaniappan, Dean(Agri) at the night school. Dr.G.V.Kothandaraman, Dean(PGS), was the Chief Guest. Prizes and uniforms were distributed to poor children. This year, a night school was started at Telungupalayam village.

Debating Society inaugural function was conducted at Anna Auditorium on November 6,1989. Dr.K.G.Shanmugavelu, Dean(Hort) presided and novalist Mrs.Vimala Ramani was the Chief Guest.

Arts and Photographic Society conducted arts and photographic exhibition at Freeman Hall on January 11-13,1990. Number of colourful photos were exhibited by the students.

Orchestra team participated in State Level Inter-Collegiate Cultural Meet organised by Dalmia Cement (Bharat) Ltd., Dalmiapuram and won runners trophy and also won best advertisement trophy.

Debating Society conducted pattimandram and Kaviarangam. Students and staff participated in this Kaviarangam and Pattimandram. Hiking Society arranged a treking from Coonoor to Bhavanisagar.

Sports and Games

Main campus students participated in Coimbatore District Inter-

Collegiate Athletic Association athletic meet and Tamil Nadu Inter-Engineering Sports Meet held at CIT, Coimbatore and won several prizes and medals. Main campus students also took part in inter-collegiate sports held at TNAU Stadium.

Basket ball men team won winners trophy in TNAU inter-collegiate tournament. Ball Badminton women team participated in Coimbatore District inter-collegiate ball badminton tournament held at Sri Avinashilingam College. Badminton (Shuttle) team (women) participated in State Level Badminton Tourney organised by PSG College of Arts and Science.

College Volley Ball, foot ball, tennis, hockey, cricket, kabadai, table tennis, tennis and chess teams participated in many friendly matches and tournaments and showed their talents.

Coaching camps for women basket ball, ball badminton and men basket ball, foot ball, volley ball and hockey were conducted.

National Cadet Corps

The regular NCC parades for the year 1989-90 commenced in May,1989. The training activities included drill with and without arms, map reading, field exercises, field signals, weapon training,etc.

The 43rd Independance Day was celebrated at the University Stadium. Hony.Col.Dr.S.Jayaraj, Vice-Chancellor hoisted the national flag.

Combined Annual Training Camp for senior division boys was held at Government Higher Secondary School, Modakuruchi. One officer along with 19 cadets participated. The Republic Day Prade was held on January 26,1990. Dr.G.V.Kothandaraman, Dean(PGS) hoisted the flag.

A shooting range firing practice was given to cadets on February 26,1990 at Madukkarai Firing Range. Fifty cadets participated. Certificate 'B' and 'C' examinations were conducted on March 6, and 12,1990.

National Service Scheme

The National Service Scheme had a strength of 550 student volunteers. NSS Units were functioning in all the campuses of the University.

The NSS volunteers actively participated in various useful activities like mass tree planting, education to rural adults and children and blood donation. The volunteers also took part in the convocation and farmers' day. During the year four special camps were conducted in villages. Desilting of tanks, cleaning schools and temple premises, kitchen gardening, rectification of rural roads, free medical check-up

to the school children, animal health campaign, conducting method demonstrations of improved technologies etc., were carried out during the camps by the student volunteers.

COLLEGE OF HORTICULTURE, COIMBATORE

Dr.K.G.Shanmugavelu continued as Dean(Hort). The Faculty of Horticulture continued to offer B.Sc.(Hort), M.Sc.(Hort), and Ph.D. degree programmes under the trimester system of education. The faculty also offered courses to B.Sc.(Ag.), B.Sc.(Forestry) and B.E.(Ag) degree programmes.

Admission

The number of students on roll in I,II,III and IV year B.Sc.(Hort) is as follows :

	Total	Boys		Girls
IVth B.Sc.(Hort)	54	24	+	30
IIIrd B.Sc.(Hort)	58	23	+	35
IInd B.Sc.(Hort)	57	25	+	32
Ist B.Sc.(Hort)	47	29	+	18

Educational Tour

A short tour for seven days during June 3-10,1989 to Nilgiris, Kodaikanal and Periyakulam was undertaken by 54 III B.Sc.(Hort) students Final B.Sc.(Hort) students participated in an all India tour for 15 days during February 18-March 4,1990 to Hyderabad, Mussori, etc. Fifty eight III B.Sc.(Hort) students under-went training in coffee cultivation at Yercaud for a period of three weeks during January, 1990. Final B.Sc.(Hort) students participated in a training programme on plantation crops at Coonoor for a period of one week during October,1989.

Village Stay Programme

Final year B.Sc.(Hort) students numbering 54 were divided into 9 groups and they stayed at 9 different places viz., Kodaikanal, Dharmapuri and Salem for one month from December 19,'89 to January 12,'90. They conducted method demonstrationsand participated in the Monthly T and V meetings etc.

COLLEGE OF AGRICULTURAL ENGINEERING, COIMBATORE

Prof.K.R.Swaminathan, continued as Dean (Engg.). The faculty continued to offer B.E.(Ag.) degree programme, M.E.(Ag.) degree programme in Soil and Water Conservation, Farm Machinery and Power, Post Harvest Technology and Agro Energy and Power and Ph.D.programme besides offering courses in agricultural engineering for B.Sc.(Ag),B.Sc.(Forestry) and B.Sc.(Hort) students.

Admission

Seventy Seven students were admitted to I.B.E.(Ag.) course. The first trimester for the I.B.E.(Ag.) commenced on 12.9.89 and for the II,III and Final B.E.(Ag.) on 15.11.89, 28.9.89 and 3.1.90 respectively. The number of students as on roll in I,II,III & IV year B.E.(Ag.) was as follows :

Class	Boys	Girls	Total
I B.E.(Ag.)	63	14	77
II B.E.(Ag.)	85	13	98
III B.E.(Ag.)	81	19	100
IV B.E.(Ag.)	80	21	101
Total	309	67	376

Educational tour

The III B.E.(Ag.) students were on Tamil Nadu State Study Tour from 17.7.89 to 24.7.89 and they visited the following industries and institutions.

Seshasayee Paper Mills, Erode, Sago Factory, Micro level hydro *electric project, Mettur Chemicals and Metkam Silicon*, Mettur Dam. NAFED Processed Foods and Institute of Hydraulics and Hydrology, Vellore, T.T.T.I and 'J' FARM, Madras, Sri Murugappa Chettiar Research Institute, Tharamani, Drip Irrigation System, Mahabalipuram, CIPET, Guindy, Integral Coach Factory, Perambur, National Engineering Company Ltd., Ambatur, Thermal Power Station, Neyveli, Annamalai University, Chidamparam, PPRC and Modern Rice Mill, Thiruvarur, BHEL, Bharathidasan University, School of Energy, Irrigation Management and Training Institute, KVK and SSRC and Grand Anaicut, Trichy. Cauvery Sugar and Chemicals, Pettaivaithalai, Pugalur Paper Mills, Pugalur, Pongalur Watershed, Pongalur.

The Final year students went on All India Study Tour from 1.9.89 to 21.9.89 and they visited the following Institutions and Industrial Organisation.

a. Andhrapradesh Agricultural University and Central Plant Protection Training Institute, Hyderabad.

b. Indian Agricultural Research Institute, Water Technology Centre and Centre for Rural Development and Appropriate Technology, New Delhi.

c. Central Soil and Water Conservation Research Institute, DehraDun.

d. International Tractors Ltd., American Springs and Pressing Works Ltd., I.I.T and Marine Drive, Bombay.

e. University of Agricultural Sciences, Bharat Earth Movers Ltd., and Visweswaraya Technical Museum, Bangalore.

Practical Training

The III B.E.(Ag.) students were on Practical Training from 5.12.89 to 27.12.89 in the following organisations.

a. TUCAS, Tudiyalur, Coimbatore.

b. Office of the Assistant Executive Engineer (Mech) and Executive Engineer, Tractor Workshop, Coimbatore.

c. Office of the Executive Engineer(RVP) and TANTEA, Coonoor.

d. Office of the Assistant Executive Engineer, CADP,Gopichetti-palayam.

Scholarships

Details of scholarships awarded during 1989-90 are detailed below :

Sl.No.	Name of the Scholarship	No.of receipients
1.	ICAR Merit Scholarship	30
2.	Scheduled Caste Loan	52
3.	Scheduled Caste Scholarship	50
4.	Teacher's Welfare Scholarship	2
5.	Backward Classes Scholarship	78
6.	TNAU Merit Scholarship - UG	30
7.	National Merit Scholarship	16
8.	Govt.of Pondicherry Scholarship	2
9.	Ex-Servicemen Scholarship	2
10.	USAID Scholarship	2
11.	CFTC Scholarship	1
12.	Arunachal Pradesh Government Scholarship	2
13.	Nagaland Government Scholarship	2
14.	Indo-Ethipian Exchange Cultural Programme Scholarship	3
15.	Jammu and Kashmir State Loan Scholarship	1
16.	Gandhi Memorial Prize Award	1
17.	SJ.Sindal Trustee Scholarship	1
18.	Andaman Nicobar Island Scholarship	2
19.	TNAU Merit Scholarship - PG	2
	Total	279

Students' Hostel

Dr.V.V.Sreenarayanan, Professor and Head, Department Agricultural Processing continued as Warden. He was assisted two Deputy Wardens. Student office bearers were also selected to he in the functioning of the hostel. Regular meetings of the mess repr entatives were held to discuss the points for smooth manageme of the messes.

There were 375 students residing in the hostel including 67 la students in the ladies hostel.

COLLEGE OF FORESTRY, COIMBATORE

College of Forestry was established on September 15,1989 w Prof.G.Kumaravelu, IFS, as Dean (Forestry). The college offer B.Sc.(Forestry) and M.Sc.(Forestry) degree programmes. The trimes system of education was followed for both B.Sc. and M.Sc.(Forestr

Admission

The number of students on role in I,II,III,IV year B.Sc.(Forest and M.Sc.(Forestry) was as follows.

	Boys	Girls	Total
I B.Sc.(Forestry)	13	1	14
II B.Sc.(Forestry)	15	1	16
III B.Sc.(Forestry)	18	-	18
IV B.Sc.(Forestry)	15	5	20
I M.Sc.(Forestry)	4	1	5
Total	65	8	73

Educational Tour

Forty students of II B.Sc.(Forestry) were on educational t frm 19.2.90 to 24.2.90. They visited forests in Top slip, Siruva Pallampatty and Mudhumalai. They also visited South India Visc and TAN India at Mettupalayam and Pandiyar tea factory at Gudal

Nineteen III B.Sc.(Forestry) students (15 boys and four girls) we on tour from 3.6.89 to 9.6.89 for a period of one week. Sandalwo depot at Salem, model nursery and forest types at Yercaud, affor tation programme, clonal orchard and avenue planting at Neyve social forestry central nursery at Attur, mangrove forests at Pitch varam, casuarina plantations in South Arcot, wild life and birds sanctu

at point calimere, forest types and silvicultural systems at Kodaikanal, soil conservation work at Vaigai and catchment Pudugai plantations of forest department at Trichy, etc., were some of the important educational spots visited by them.

Forest Stay Programme

The final year B.Sc.(Forestry) students were on forestry stay programme for one month from 9.1.90 to 8.2.90. The students were placed in Bolampatti range, Top slip range and Mettupalayam range at the rate of six students in each range. During this programme, the students learnt about the forest types, wild life, forest operations, elephant camps, timber sales, tribal settlement, fire protection measures, etc.

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, MADURAI

Dr.T.S.Manickam was the Dean during the period under report. There were 14 departments, ten under the Faculty of Agriculture and four under the Faculty of Basic Sciences and Humanities. Ph.D. programme in six disciplines has been introduced from the year 1989-90.

Admission

The number of students on roll was as follows :

	Boys	Girls	Total
I B.Sc.(Ag)	59	61	120
II B.Sc.(Ag)	30	58	88
III B.Sc.(Ag)	23	76	99
IV B.Sc.(Ag)	36	58	94
I B.Sc.(HSc)	2	8	10
II B.Sc.(HSc)	4	12	16
III B.Sc.(HSc)	4	13	17
I M.Sc.(Ag)	22	31	53
II M.Sc.(Ag)	28	34	62
I M.Sc.(Hort)	2	3	5
II M.Sc.(Hort)	3	6	9
I M.Sc.(FS&N)	-	5	5
II M.Sc.(FS&N)	1	3	4
I Ph.D	20	4	24
II Ph.D.(FS&N)	-	3	3
Total	234	375	609

Eighty eight B.Sc.(Ag) second year students were taken on Educational tour to Regional Research Station, Aruppukkottai, Regional Research Station, Kovilpatti, Agricultural College, Killikulam, Fisheries

College, Tuticorin, Kanyakumari Fruit Farm, Rice Research Station, Ambasamudaram, Cotton Research Station, Srivilliputhur, Horticultural Research Station, Periyakulam and to Vaigai Dam from 18.12.89 to 23.12.89 in two batches.

Ninety nine B.Sc.(Ag) third year students were taken on an educational tour to Vedasandur, Mettupalayam, Bhavanisagar, Sirumugai, Trichy, Thanjavur, Aduthurai, Veppankulam, Vamban and to Tamil Nadu Agricultural University, Coimbatore and Sugarcane Breeding Institute, Coimbatore from 18.1.90 to 24.1.90.

Final B.Sc.(Ag) students of 1989-90 batch were taken on an al India study tour between 16.9.89 and 1.10.89. They learned the activities of various national level institutions like IARI, Nuclear Researcl Laboratory, Water Technology Centre, Advance Centre for Microbiology National Physical Laboratory, Soil Survey and Land Use Plannin Institutes etc., at New Delhi, Forest College and Research Institut and Soil and Water Conservation Research and Training Institut at Dehradun, National Dairy Research Institute and Soil Salinity Resear Institute at Karnal, Regional Research Station at Jaipur and garde lay out at Agra. Besides, they got acquainted with the socio-economi conditions of the people of North India.

Village Stay Programme

This programme was organised in 9 villages for a period of 30 day from 20.12.89 to 19.1.90. Three centres were exclusively identifie to place the girl students. The students gained on farm trainin on various crops.

Scholarships

Sl.No.	Name of Scholarships/fellowships	UG	PG	Total
1.	Adidravidar Welfare Scholarship and Adidravidar Welfare Loan Scholarship	44	-	44
2.	Backward Classes Welfare scholarship	81	3	84
3.	ICAR Junior fellowship	-	25	25
4.	ICAR Senior fellowship	-	1	1
5.	DNT Scholarship	2	1	3
6.	M/s.Rashtriya Chemicals Ltd. Fellowship	-	1	1
7.	Madras Fertilizers Ltd. Fellowship	-	1	1
8.	Godrej soaps Ltd., fellowship	-	1	1
9.	Indofil chemical Ltd. fellowship	-	1	1
10.	Charda chemical Ltd.fellowship	-	1	1
11.	M/s.Pest control India Ltd.fellowship	-	1	1

12.	Aspee Agrl.Research and Development Foundation fellowship	-	3	3
13.	Minor tuber crops	-	1	1
14.	Arunachalam shastiabthapoorthy scholarship	1	-	1
15.	Farmers Committee fund scholarship	1	-	1
16.	S.J.Jindal Trust scholarship	1	-	1
17.	Pondicherry State Scholarship	4	-	4
18.	National Merit Scholarship	38	-	38
19.	Agri Merit Scholarship	40	24	64
20.	Adhoc merit grant	8	-	8
21.	Bright students award	3	-	3
22.	Merit cum means award	1	-	1
23.	National loan scholarship	1	-	1
24.	AFST Education and Publication Trust scholarship	-	1	1
25.	Prize money (SC/ST)	3	-	3
26.	Coffee Board	1	-	1
27.	Anna Memorial award (Prize amount)	2	-	2
28.	GOI Scheme Junior fellowship	-	1	1
29.	Yelchur Venkatakottaiah Charities scholarship	1	-	1
	Total	232	66	298

Students' Hostel

There were five hostels functioning in this campus to accommodate the students. During the 1989-90, 181 boys and 309 girl students were accommodated in the hostel. Forty four I B.Sc.(Ag) students admitted in ADAC, Kumulur were also staying in this hostel. The hostel was administered by the Dean. He was assisted by a warden, three deputy wardens and three resident tutors besides administrative personnel.

Students' Club

The students club activities were inaugurated on July 17,1989 by the Vice-Chancellor Dr.S.Jayaraj and he released the **"TRIUMPH"** magazine. Dr.T.S.Manickam, Dean, welcomed the gathering. Jawaharlal Nehru Centenery was celebrated on November 14,1989. The students participated in a number of literary events and brought out their talents in arts, photography, orational elegance, light music etc.

14.	Andaman-Nicobar Island Scholarship	1	1,500.00
15.	Prize Money Award	6	12,000.00
16.	TNAU, Merit Scholarship	2	2,200.00
		288	4,27,406.00

Students' Hostel

The hostel was run under the Chairmanship of the Dean who was assisted by a warden and two deputy wardens. The first and second year students who were accommodated in hired hostel premises in the MDT Hindu College are now shifted and accommodated in the new hostel buildings constructed in the Killikulam campus.

The messes were run on dividing system actively involving student representatives with committees for purchase of materials and preparation of menu etc. A full time medical officer attended on the students and provided medical care.

Students' Club

The students' club activities were inaugurated on September 22, 1989 by Thiru S.Rajarathinam, District Collector of Nellai Kattabomman District. The activities of the students club are governed by a number of societies such as Dramatic Society, Debating Society, Arts and Photographic Society etc. During the year 1989-90, the students won the "Annai Velankanni" rolling shield for the third time consecutively. Music instruments worth of Rs.20000/- were purchased during the year for coaching students in playing musical instruments. Muthamizh vizha was celebrated on February 5-7,1990. The college team consisting of 64 players and athlets participated in the inter-collegiate tournaments and sports held during January 26 to January 31, 1990 at TNAU Main campus,Coimbatore. The Social Service League conducted night school for the benefit of nearby village children.

National Service Scheme

The National Service Scheme has a strength of 150 volunteers. They assisted in institutional development work like maintenance of lawns, roads, cleaning the surroundings of class rooms etc. The students have also organised tree planting programmes, free medical camps, crop health camp etc., for the benefit of farming community. A special NSS Camp was organised at Perungulam Village for 10 days from December 31,1989 to January 1,1990. Forty five students and five village youths participated in this camp.

ANBIL DHARMALINGAM AGRICULTURAL COLLEGE, KUMULUR

During the academic year, a new Agricultural College namely

Anbil Dharmalingam Agricultural College was started on September 7, 1989 at Kumulur, Dr.K.M.Ramanathan was appointed as the Dean.

Admission

Forty four students were admitted in the B.Sc.(Ag) programme for the academic year 1989-90 as the first batch of entrants to Anbil Dharmalingam Agricultural College. They were housed initially for their studies at Agricultural College and Research Institute, Madurai for I and II trimesters. The students will be shifted to Anbil Dharmalingam Agricultural College, Kumulur during June, 1990 for their II year programme.

POST-GRADUATE EDUCATION

Dr.G.V.Kothandaraman continued as Dean (PGS) during the period under report. Masters degree programme was offered in 24 disciplines and Ph.D. in 14 disciplines in Agriculture, Horticulture, Agricultural Engineering and Food Science and Nutrition. Post-graduate Diploma in Sericulture was offered during the year.

Admission

During 1989-90, 231 students were admitted for Masters degree programme in Agriculture, Horticulture, Agricultural Engineering and Food Science and Nutrition. Master's degree Programme in Plant Nematology was revived and two new post graduate programmes viz., M.Sc.(Environmental Science) and M.Sc.(Forestry) with a strength of 5 in each discipline were started during this year. Under Doctoral programme, 109 scholars were admitted in Agriculture, Horticulture, Agrl.Engineering and Food Science and Nutrition. Ph.D. programme on part-time basis was revived during this Academic year. Ph.D. programme was started at Agricultural College and Research Institute, Madurai in six disciplines, viz., Agronomy, Plant Breeding and Genetics, Agrl.Entomology, Plant Pathology, Soil Science and Agrl.Chemistry and Econometrics. During the period under report, 59 teachers from Agriculture, 4 from Horticulture, 8 from Agrl.Engineering and 2 from Food Science and Nutrition were selected under part-time programme.

The number of students admitted and passed out from various postgraduate programmes of the University during 1989-90 are furnished below :

a) Masters' degree programme

Sl. No.	Discipline	No.of students admitted				To- tal	No. stu- dents pass ed out
		Coimbatore Campus		Madurai Campus			
		Boys	Girls	Boys	Girls		
1	2	3	4	5	6	7	8
1.	Agronomy	7	7	4	5	23	20
2.	Pl.Br. & Genetics	8	5	4	4	21	30
3.	Agrl.Entomology	5	3	1	6	15	17
4.	Plant Pathology	5	4	2	3	14	5
5.	Soil Science & Agrl. Chemistry	1	7	2	6	16	17
6.	Agrl.Economics	3	7	5	4	19	4
7.	Agrl.Extension	8	8	4	4	24	15
8.	Seed Technology	2	5	-	-	7	13
9.	Agrl.Microbiology	3	3	-	-	6	8
10.	Crop Physiology	2	3	-	-	5	7
11.	Agrl.Mark.Management	4	1	-	-	5	6
12.	Sugarcane Production	2	-	-	-	2	8
13.	Plant Protection	3	-	-	-	3	4
14.	Plant Nematology	3	2	-	-	5	1
15.	Master of Business Management(MBM)	8	2	-	-	10	-
16.	Biotechnology	8	4	-	-	12	-
17.	Environmental Science	3	2	-	-	5	-
18.	Forestry	4	1	-	-	5	-
19.	Horticulture	3	6	2	3	14	19
20.	Food Science & Nutrition	-	-	-	5	5	5
21.	Farm Power & Machinery	5	-	-	-	5	1
22.	Soil & Water Conservation	1	1	-	-	2	-
23.	Agro-Energy & Power	3	-	-	-	3	-
24.	Post Harvest Technology	3	2	-	-	5	-
25.	Farming System Management	-	-	-	-	-	6
	Total	94	73	24	40	231	186

b. Ph.D. Degree Programme

Sl. No.	Subject	Coimbatore Campus Part time	Coimbatore Campus Full time	Madurai Campus Part time	Madurai Campus Full time	Total	No.of students passed out
1.	Agronomy	5	5	5	-	15	13
2.	Pl.Br.& Genetics	5	4	5	-	14	7
3.	Agrl.Entomology	5	2	3	-	10	7
4.	Plant Pathology	4	1	1	3	9	4
5.	Soil Science & Agrl. Chemistry	4	3	2	1	10	10
6.	Agrl.Economics	3	2	-	-	5	2
7.	Agrl.Microbiology	4	1	-	-	5	-
8.	Seed Technology	2	2	-	-	4	1
9.	Crop Physiology	2	3	-	-	5	2
10.	Econometrics	4	-	2	-	6	-
11.	Horticulture	4	6	-	-	10	5
12.	Food Science & Nutrition	-	-	2	1	3	-
13.	Agrl.Engineering	8	-	-	-	8	-
14.	Environmental Biology	-	-	-	-	-	1
15.	Agrl.Extension	3	2	-	-	5	5
	Total	53	31	20	5	109	57

Scholarships and Fellowships

The following scholarships, fellowships and stipends have been awarded to the post-graduate students in various disciplines during the year 1989-90.

Sl.No.	Particulars	Senior	Junior	Total
1.	I.C.A.R.	-	68	68
2.	I.C.A.R. Scheme	-	3	3
3.	G.O.I. Scheme	-	5	55
4.	International Food Policy Research Institute, USA, Fellowship	-	1	1
5.	F.A.O. Fellowship	-	2	2
6.	Seshasayee Paper & Boards Ltd.	-	2	2
7.	Ghardha Chemicals, Bombay (P.P)	-	1	1
8.	Madras Fertilizers, Madras	-	2	2
9.	Ghardha Chemicals, Bombay (Ent.)	-	1	1
10.	T. Stanes & Company	-	1	1
11.	Potash & Phosphate Institute of Canada	-	1	1
12.	M/s.Godrej Soap Ltd., Bombay	-	1	1
13.	M/s.I.C.I. India Ltd., Madras-8	1	-	1
14.	M/s.Rastriya Chemicals, Bombay	-	1	1
15.	Biotechnology Studentship	-	6	6
16.	TNAU Merit Scholarship (1988-89)	-	54	54
17.	M/s.Pyrites Phosphates & Chemicals Ltd., New Delhi.	-	2	2
18.	M/s.Indofil Chemicals Company,Bombay	-	1	1
19.	M/s.Tuticorin Alkali Chemical & Fertilizer Ltd., Madras	-	1	1
20.	Ghardha Chemicals Ltd., Bombay(Ag)	-	1	1
21.	Ponds India Ltd., Nilgiris	-	1	1
22.	TNAU Merit Scholarship(1989-90)	-	42	42
23.	Potash Research Institute of India Ltd., New Delhi	-	1	1
	Total	1	198	199

UNIVERSITY LIBRARY

The Tamil Nadu Agricultural University Library possesses highly unique collection of research reports and scientific periodicals. The University library holds useful collection of scientific documents in the fields of Agriculture, Horticulture, Forestry, Fisheries, Agricultural Engineering, Biotechnology and other allied subjects placed in a well equiped modern building.

Apart from printed materials, the library possesses substantial microform holdings, reprints, pamphlets, leaflets, reports and maps. In addition to reference services, the Library conducts orientation classes to guide the students in the effective utilisation of the books and other facilities. The inter-library loan facility is available in the library. This facilitates the exchange of documents on reciprocal basis from other universities, colleges, academic and research institutions at national and international level. The library is kept open for reference from 9.00 a.m. to 9.00 p.m. on all working days and from 8.00 a.m. to 2.00 p.m. on Sundays excluding public holiday.

During the academic year 1988-89, 692 books and periodical back files have been added to the existing collection. The additions included 127 gratis books, 122 theses and 57 advances and annual reviews. The library purchased 386 books during the year. Presently the library has 1,33,634 books and periodical back files.

During the year, the library received 7,091 single issues of periodicals. The library subscribed 878 journals out of which 563 were foreign, 315 Indian, and 135 and 30 received as gratis and exchange respectively. Under technical processing work, 621 documents were classified, catalogued and arranged according to classified order.

The library collections were utilized by 75,584 readers who referred 14,45,309 documents. In the charging counter, 56,769 books were issued on loan for home reading. In addition to this 8,251 readers were rendered reference assistance.

Twenty five instruction classes were held for the undergraduate and postgraduate students and research scholars. The Library Committee met three times and discussed the ways and means to improve the library facilities so as to render effective service to the users. During the academic year under report, computer and xerox facilities have been established in the library to provide quick documentation services.

A separate Students Library has been functioning in the Old Library Block at Anna Auditorium for the benefit of undergraduate students. It functions from 5.00 p.m. to 9.00 p.m. on all working days. All the text books pertaining to undergraduate classes were made available subjectwise. Only the undergraduate students are

allowed to have transaction of books. The postgraduate students research scholars and staff are permitted to utilize the Students Library for reference only. The students Library was utilised by 12996 students who referred 2,21,939 books. In the charging counter 12,282 books were issued on loan for home reading.

Plot cultivation-students - A.C. & R.I., Killikulam

Exhibition organised by students under Village Stay Programme

4. RESEARCH

The major research achievements of the University in the areas of crop improvement, management, and protection in field crops,horti-culture, agricultural engineering, water technology and agricultural and rural development studies are presented below :

AGRICULTURE

RICE

Crop Improvement

Variety Released

CO 45 : The rice culture TNAU 80042 (R.Heenati/IR 3403-267-1), suitable for second season of Tamil Nadu, was released as CO 45 during January, 1990, as an alternative to IR 20 and CO 43. It yields on an average 5853 kg/ha in 140 days and the yield increase is 10 and 15 per cent over CO 43 and IR 20 respectively. This semi-dwarf variety (75-85 cm) is resistant to GLH, SB, Blast, BLB and RTV and moderately resistant to sheath rot with better exersion of panicle (0.5 to 3.0 cm) than CO 43. The rice is long, slender, transluscent and white.

Promising cultures

TM 6012 (C22/BJ1) : This is a short duration drought resistant genotype recording 53.8% more grain yield than PMK 1 and suitable for Chengai-Anna district to replace local varieties like Sembalai.

AS 37133 (IR 34/CO 42) : This culture is capable of yielding on an average 5052 kg/ha in 132 days with 38.7% and 38.3% increase over IR 20 and CO 43 respectively.

AD 85361 (IR 56 x IR 50) : This short duration culture has recorded a grain yield of 6456 kg/ha in 109 days which is 13 per cent more than IR 50.

Crop Management

Field experiments conducted at TRRI, Aduthurai revealed that combination of summer ploughing during May-July and application of thiobencarb @ 1.5 kg a.i/ha as sand mix one day after wetting the soil by an irrigation or soaking rain followed by one hand weeding on 30 days after germination was the most efficient management practice under direct sown rice in terms of weed control and grain yield (5.51 t/ha).

At Madurai, irrigating rice crop with 5 cm depth of water one day after disappearance of ponded water gave significantly higher yield with a saving of 23.6% irrigation water besides increased WUE by 31.2% than continuous flooding.

The integrated farming system involving crop activity with fish, poultry and mushroom culture gave maximum net return of Rs.18825/ha with an increase of Rs.8164/ha over conventional cropping system.

In Adhanur and Padugai soil series, application of P at 25 kg/ha on alternate season basis had recorded the highest rice grain yield which was on par with the yield of every season application at Aduthurai.

At Madurai application of furnace slag, a waste material from steel industry @ 1000 kg SiO_2/ha (or furnace slag at 5 t/ha) over and above the NPK application (100:25:50) significantly increased the grain yield of rice (cv.ADT.36). Further this treatment reduced considerably the population of gall midge and leaf folder.

The study on iron and zinc nutrition of direct sown semi-dr rice in Thanjavur revealed that both basal application of ferrou sulphate at 50 kg/ha and zinc sulphate at 25 kg/ha and foliar appli cation of zinc sulphate at 0.5% along with ferrous sulphate a 1% significantly increased the grain yield of rice.

Study on alternate cropping systems for the new delta unde assured irrigation showed that groundnut-rice-groundnut was highl remunerative with a net profit of Rs.24,478/ha and a water require ment of 1512 mm as against the conventional cropping syst ie. rice-rice-cotton with a net profit of Rs.18,482/ha and wa requirement of 2883 mm.

Crop Protection

Neem seed kernel extract (NSKE) 5% and neem oil 3% effec tively controlled green leaf hopper (GLH), white backed brow plant hopper (WBPH), leaf folder, gall midge and earhead bug. Hig and low volume applications of neem products were better tha ultra low volume application in the management of rice pest

Field trials conducted during 1988 and 1989 revealed tha nickel nitrate and nickel chloride sprays at 0.3 per cent concentra tion significantly reduced bacterial leaf blight infection and increase the grain yield of rice considerably.

The staphylinid beetle **Paederus fuscipes** has shown high preda tory potential against BPH. It consumed 11.8 first instar BPH pe day or 8 second instar or 5 third instar or 4 fourth instar or 3. brachypterous female BPH per day.

Defatted neem kernel powder at 1 g/kg of seed effectivel controlled storage pests like rice weevil (**Sitophilus oryzae**), grai

borer (**Rhizopertha domnica**) and red flour beetle (**Tribolium castaneum**).

An avirulant strain of **X.campestris** p.v. Oryzae was found to induce resistance against BLB of rice. Colony forming unit (cfu) concentrations of 10^8 and 10^6 ml were highly effective in controlling the disease.

Calcium sulphate (0.2%) or magnesium sulphate (0.2%) as foliar spray at panicle initiation and 10 and 15 days later and gypsum as soil application (500 kg/ha) at panicle initiation stage were the most effective treatments in reducing sheath rot in rice (16.7% and 22.6%) and was comparable with the standard fungicides carbendazim and captafol (16.0 and 19.3%). In the control plots, there was 60.9% incidence of sheath rot.

MILLETS

SORGHUM

Crop Improvement

Variety Released

K.9 : It is derivative of the cross M.36200 x Tenkasivellai. It is a medium duration (119 days) and high yielding location specific strain from Kovilaptti, suitable for growing in the summer sorghum tract of Tenkasi, where sorghum is raised in **Chitraipattam** under irrigated conditions. It has a yield potential of 2.7 t/ha accounting for 29.4 per cent increase over the local variety Tenkasivellai. It has high level of tolerance to shootfly, stem borer, earhead bug and drought.

Promising cultures

X7555 (SPH 506) : It is a hybrid developed at Coimbatore with proven female parent 296 A and the newly identified combiner TNS 30 (SPV 544). It has high yield potential and tolerance to major pests and diseases.

TNS 39 : It is a red grain pureline culture from Murungapatti local with a duration of 90 days. It possesses higher yield potential than locally adopted CO 4. Its potentiality to replace CO 4 is being evaluated by organising on-farm trials in Salem District.

Crop Management

Mixed stand of sorghum with blackgram gave higher returns than solid stand of sorghum. Application of **Azospirillum** (10 pockets per ha as soil application immediately after rains) along with 20:20:0 kg/ha NPK through enriched FYM (750 kg/ha) to the mixed stand of sorghum with blackgram gave the highest net return of Rs.3373/ha. The B/C ratio was 2.52.

Among the intercropping systems tried at Aruppukottai, maize+ redgram gave the highest net return of Rs.3832/- at 20:30:0 kg NPK/ha with 1758 kg of maize and 669 kg of redgram. The LER was 1.41 and the B/C ratio was 2.56.

Three year results revealed that premonsoon sowing of sorghum CO 26 during 38th standard week (2nd week of September) at Coimbatore recorded higher grain yield in all the three years and was superior to normal sowing after the onset of monsoon. With regard to the straw yield similar trend was noticed.

At Coimbatore, under rainfed conditions, sorghum (CO 26) intercropped with forage cowpea (CO 1) in paired row system with NPK at 20:20:0 with enriched FYM recorded good return of Rs.4781/ha with B/C ratio of 2.32.

At Madurai, composted coir pith (12.5 t/ha), coir pith based poultry litter (6.25 t/ha) and FYM (12.5 t/ha) were on par in increasing the yield of sorghum (CO 26) and the residual crop of cowpea (CO 3).

In a moisture conservation study on rainfed sorghum at Kovilpatti, incorporation of coir waste @ 12 t/ha + FYM @ 5 t/ha along with the recommended dose of fertilizer @ 40:20:0 kg NPK/ha as basal resulted in high yield of 1100 kg/ha followed by the application of FYM @ 5 t/ha along with recommended fertilizer of 40:20:0 kg NPK/ha.

Crop Protection

Application of carbofuran 3 G at 3 g/meter at the time of sowing recorded lowest dead heart incidence followed by spraying endosulfan 0.07% and cartap 0.1% on 7,14 and 21 days after germination.

CUMBU

Crop Improvement

Promising cultures

UCH 11 (732 A/PT 3095) has a yield potential of 4750 kg/ha. The duration of this culture is 100-105 days. It possesses resistance to downy mildew disease.

ABH 66 (732 A/PT 3075) has a duration of 100 days with a yield potential of 3678 kg/ha which is 15.5% more than X 5.

The above two hybrids are in adaptive research trial.

Crop Management

In the permanent manurial experiment conducted at Kovilpatti on rainfed cumbu (KCH 2652), the result indicated that the highest

grain yield was recorded in the treatment 40 kg N + 20 kg P_2O_5 + 25 kg $ZnSO_4$/ha applied basally.

Crop Protection

At Coimbatore three cultures of cumbu viz., ICMS 7703, PNBM 83099 and 5054 A were found to be resistant to downy mildew. At Kovilpatti three cultures viz., P 24-1, 7042-1-4-4 and 700481-21-8 were free from rust and downy mildew infections.

RAGI

Crop Improvement

Promising cultures

TNAU 511, a derivative of Indaf 1/TNAU 303/2-4 has recorded 4102 kg/ha accounting for 74.4, 58.8 and 41.7 per cent more than the checks CO 13, CO 12 and CO 11 respectively. It has a duration of 105-110 days.

Crop Management

Studies at Paiyur have shown that for rainfed direct sown ragi, forming furrows between crop rows at 25-30 DAS was found to be equally effective as compartmental bunding after sowing (8 m x 5 m basin).

Application of 50 kg N ha^{-1} in two splits at sowing and 20-30 DAS with 20 kg P_2O_5 as enriched FYM at sowing was superior to top dressing of N at 25-30 DAS and P_2O_5 applied as straight fertilizer at sowing.

Crop Protection

Two sprays of edifenphos effectively controlled the finger blast infection in ragi and resulted in maximum yield.

MAIZE

Crop Management

Results from Paiyur showed that maize could be successfully grown under rainfed conditions in the red soils of North Western Zone during June-July to September-October. Rainfed maize may be recommended to partly substitute sorghum CO 19 and Samai.

Maize varieties COH 1 or K 1 or CO 1 can be recommended for rainfed cultivation.

An optimum population of 1,10,000 plants ha^{-1} (45x25 cm spacing) has to be maintained for high yield.

Application of 60:30:30 kg NPK ha^{-1} with azospirillum inoculation through seed and soil gave good yield from rainfed maize.

Further 30 kg P_2O_5 and 30 kg K_2O are to be applied as enriched FYM and nitrogen in two splits as basal and at tasselling. Two packets of azospirillum for seed treatment and 10 packets for soil application per hectare are to be used.

Coir pith @ 10 t/ha was found to be an ideal soil amendment for tannery effluent affected soils. Coir pith gave significantly high grain (2914 kg/ha) and straw yield (6350 kg/ha) of maize (CO 1).

PULSES

REDGRAM

Crop Improvement

Promising cultures

At Vamban, an early duration culture VR 1 was found to record the highest average yield of 941 kg/ha as against CO 5. This culture will be released shortly as a location specific variety.

VR 3, a long duration redgram with resistance to SMD is proposed to be released to replace SA 1.

CORG 5, a medium duration high yielding drought tolerant redgram culture will be released for general cultivation in West and North West Zones of Tamil Nadu for Kharif season.

Crop Management

At Aruppukottai, for the rainfed vertisols receiving more than 300 mm rainfall during the crop growth period, agathi+redgram (CO 5) + Cotton (MCU 10) + Blackgram (CO 5) multistoreyed cropping system was highly suitable which gave 3226 kg of agathi fodder, 217 kg of redgram, 194 kg of cotton and 409 kg of blackgram. The LER was 1.67 and the B/C ratio worked out to 3.80.

Crop Protection

ETL for **Maruca** (3.0) and **Exelastis** (5.0) of redgram have been worked out.

Application of NPV at 500 LE/ha has effectively controlled **Heliothis armigera** and increased the yield significantly.

Seed treatment plus row application of **Trichoderma viride** significantly controlled the wilt disease caused by **Fusarium udum**.

BLACKGRAM

Crop Improvement

Promising cultures

Cultures COBG 305, VB 3 and KBG 512 were found promising

and forwarded to on-farm trials during kharif, rabi and summer along with checks CO 5 and VBN 1.

Crop Protection

Seed pelleting with dimethoate at 5 ml/kg followed by one round of spraying with endosulfan 0.035 per cent effectly controlled the stemfly.

Seed treatment plus soil application of **Trichoderma harzianum** or **T.viride** significantly reduced the incidence of root rot and increased the yield significantly.

GREENGRAM

Crop Improvement

Variety Released

CO 5 : It is a hybrid derivative between KM 2 and MG 50-10 (G) with medium duration (70-75 days) and medium plant stature. It has a yield potential of 900 kg/ha under rainfed condition as against 656 and 673 kg recorded by CO 4 and Paiyur 1 respectively. It is photoinsensitive with field tolerance to yellow mosaic, leaf crinkle and powdery mildew diseases and less susceptible to major insect pests.

Crop Protection

The incidence of leaf curl, leaf crinkle and yellow mosaic of greengram was found to be minimum in rabi than in summer and kharif seasons. The grain yield was 15.0 and 18.3 percent more than that obtained in summer and kharif seasons respectively.

Application of neem seed kernel extract 5% twice starting from 50% flowering stage followed by one round of endosulfan 0.07% spray was effective for the control of greengram pod borer.

COWPEA

Crop Improvement

Promising cultures

A cowpea culture from Vamban VCP 5 (CO 4 x C 152) maturing in 70 days has recorded a mean yield of 753 kg/ha. The yield increase was 16% over CO 4 (649 kg/ha). This culture was advanced to ART.

A vegetable cowpea selection VCP 6 identified at Vamban was found to be superior to CO 2. It matured in 80 days and recorded an average yield of 3864 kg/ha which is 30.3% more than that of CO 2 (2964 kg/ha).

Crop Management

Seed hardening in cowpea was done by soaking the seed in aqueous solution of zinc sulphate at 100 ppm at 1/3rd volume of seeds for 4 hours and quickly air drying in shade to original moisture level.

Rhizobial strain SRR 5 isolated from Coimbatore has been found to be salt tolerant.

SOYBEAN

Crop Improvement

Variety Released

ADT 1 : Culture UGM 33, capable of yielding 15 per cent higher than CO 1 was released as ADT 1 for general cultivation during this year. It is suitable for rice fallows of Cauvery Delta. It has a crop duration of 85-90 days with mean yield potential of 1274 kg/ha. It possesses 30 per cent protein and 29 per cent oil and has field tolerance to leaf miner and leaf webber.

Promising cultures

At Aduthurai UGM 34 recorded average yield of 1358 kg/ha as against 1079 kg/ha by the check CO 1. This culture has been proposed for testing under ART.

Two high yielding cultures viz., UGM 40 and UGM 51 were identified at Coimbatore and were being evaluated in advance yield trial.

Crop Management

Selection of high yielding varieties like CO 1 and ADT 1, sowing during middle of July to end of September, maintenance of 3.33 lakh plants/ha with a crop geometry of 30 x 10 cm, pre-emergence application of herbicide fluchloralin at 1.00 kg ha^{-1} at 3 DAS and basal application of 20:40:20 kg NPK/ha ensured high yield from soybean as a rainfed crop in the North Western zone.

Soybean as an intercrop in sugarcane gave an additional income of Rs.1800-2000/ha. In coconut gardens, soybean as an intercrop gave an additional income of Rs.1000/- per ha and as bund crop in rice fields, the grain yield ranged from 7.5 to 8.5 kg per 100 metre length. Soybean could be successfully raised as an intercrop in rainfed groundnut, sorghum and ragi for additional yield and income.

Foliar spray of $MnSO_4$ in soybean three times viz., 30th, 40th and 50th day after sowing has resulted in increased yield.

Inoculation of <u>Rhizobium</u> with soil application of pressmud at 2 t/ha recorded 34.2% increased grain yield in soybean at Vamban.

Irrigating soybean once in 10 days during vegetative stage and once in 16 days during reproductive stage recorded the highest seed yield of 2242 kg/ha during kharif season. During summer, irrigation once in 10 days during vegetative stage and once in 12 days during reproductive stage of rice fallow soybean recorded a yield of 2083 kg/ha at Kattuthottam.

February third week during summer and June second week during Kharif are the best time of sowings to realise high yields of soybean.

Crop Protection

Spraying of neem seed kernel extract 5% was as effective as endosulfan @ 250 ml/ha in reducing the damage by galerucid beetle and leaf miner in soybean.

BENGALGRAM

Crop Improvement

Promising culture

COG 4 : It is a selection from Phule G2. It has a crop duration of 82 days with a mean yield of 1048 kg/ha as against 922 kg/ha by check CO 3.

HORSEGRAM

Crop Improvement

Promising culture

At Coimbatore, culture CODB 7 recorded the highest yield of 797 kg/ha. This has been forwarded to ART.

LAB-LAB

Crop Improvement

Promising culture

A lab-lab culture COLT 20, a cross derivative of CO 9 x Sivappu Avarai maturing in 100-110 days was found suitable for all seasons. It recorded green pod yield of 10200 kg/ha in on-farm trials.

Crop Protection

NPV 125 LE + teepol 0.1% + endosulfan 0.07% or NPV 125 LE + teepol 0.1% + endosulfan 0.035% spray was effective in controlling pod damage by **<u>Heliothes,</u>** **<u>Sphenarches</u>** and **<u>Maruca</u>** and increased the yield significantly.

SWORD BEAN

Crop Improvement

Variety released

SBS 1: It is photo-insensitive type maturing in 110-120 days. Tender pods are ready for harvest from 75 days after sowing. The seeds could also be used for consumption. It gives an average grain yield of 1356 kg/ha and green pod yield of 7500 kg/ha. It is tolerant to major pests and diseases.

OILSEEDS

GROUNDNUT

Crop Improvement

Variety released

VRI 3 : The promising groundnut culture VG 55, a cross derivative of J11 x Robut 33-1 was released as VRI 3. It matures in 90 days with average yield of 1608 kg/ha under rainfed condition and 1882 kg/ha under irrigated condition. The shelling and oil content of the variety are 75.0 and 48.7 per cent respectively. It is suitable for intercropping in sugarcane, tapioca, coconut and banana.

Promising cultures

The following three promising cultures were identified at Vridhachalam and were proposed for ART.

IGGS 50 : Semi-spreading, tolerant to leaf miner, rust and leaf spot with 73 per cent shelling and 49.4 per cent oil content. It is capable of yielding 1400 kg in 115-120 days duration.

VG 115 : Spreading type with 135 days duration. Average pod yield is 1340 kg/ha. Tolerant to late leaf spot and rust. Shelling out-turn 68.3 per cent and oil content 51.6 per cent.

VG 108 : Semi-spreading type with a maturity period of 120 days. Its potential yield is 1998 kg/ha. Tolerant to rust, late leaf spot and leaf miner. Shelling out turn 69.5 per cent and oil content 49 per cent.

Crop Management

The crop sequence viz., groundnut-rice-blackgram resulted in highest net return with a saving of 23 per cent irrigation water besides improving soil fertility when compared to the conventional sequence of rice-rice in Periyar Vaigai ayacut area.

Results of five season trials with groundnut (var.JL 24) at Madurai showed that composted coir pith at 10 t/ha increased the

groundnut pod yield by 30.2 per cent over application of inorganic fertilizers.

Intercropping systems of groundnut + blackgram and groundnut + redgram gave high net returns of Rs.6587/ha and Rs.5750/ha respectively in red lateritic soils of Pudukottai.

Crop Protection

Neem oil 1.0%, neem cake extract 5.0%, Pinnai oil 1.0%, and iluppai oil 1.0% were very effective in the control of groundnut rust and on par with mancozeb 0.2% spray.

SESAMUM

Crop Improvement

Variety released

Paiyur 1 : The high yielding culture DPI 1523 (Si 2511 x Si 2314) maturing in 90 days was released during the year for general cultivation as Paiyur 1. It is a tall and errect plant type with profuse branching, dark green foliage with closely set capsules on the stem. Its average yield is 644 kg/ha which is 14% more than CO 1. It is suitable for all cropping sequences involving sesamum under garden land. It is resistant to powdery mildew and less suceptible to shoot webber.

Promising cultures

At Vridhachalam, culture VS 117 (BS 6-1 x EC 119403) maturing in 75 days with an average yield of 526 kg/ha and another culture VS 339 (TMV 4 x No.45) maturing in 85 days with an average yield of 955 kg/ha were identified based on their performances during the last three seasons and forwarded for further evaluation.

Crop Management

Studies on micronutrient requirement of irrigated crop of sesamum revealed that application of $ZnSO_4$ at 12.5 kg/ha recorded significantly higher grain yield (627 kg/ha) than control (525 kg/ha). There was no response for $MnSO_4$ and $FeSO_4$ application.

Presowing seed hardening gingelly seeds with 2% $CaSO_4$ or 2% KH_2PO_4 gave high net return and B/C ratio.

Crop Protection

Two rounds of spraying endosulfan 0.07% one at 30 DAS followed by second spray at 45 DAS was found to be effective in controlling the pests of sesamum at Vridhachalam.

Two rounds of spraying neem oil 2% once at 30 DAS followed by second spray at 45 DAS effectively controlled **Antigastra catalaundalis.**

SUNFLOWER

Crop Improvement

Promising culture

To overcome self incompatible system, a self fertile line TNAU SUF 6 developed at Coimbatore has consistently recorded higher yield than CO 2 with an average increase of 33 per cent.

Crop Management

Sunflower seeds soaked in 1% nutrient solution containing equal quantity of manganese sulphate, zinc sulphate, boric acid and ferrous sulphate recorded higher yield than control. The treatment increased the mean yield by 11% and net return by Rs.462/ha over control. The cost of treatment was only Rs.13/ha

CASTOR

Crop Improvement

Promising culture

A new castor hybrid from Gujarat GCH 4 (VP 1 x 48-1 with red stem, triple bloom, spiny and non-dehiscent capsule) has consitently performed better than TMV 5 recording a mean yield of 1109 kg/ha in 168 days.

Crop Protection

Studies at Tindivanam on the effect of neem products on the management of castor pests revealed that the neem seed kernel extract 3% (@ 30 g/litre) was found to be as effective as endosulfan in controlling leafhoppers and significantly superior over unsprayed control. The combination of neem seed kernel extract 3% with neem seed oil 2% (@ 2 ml/litre) significantly controlled the semilooper larvae better than the chemicals and found to be superior over control.

COCONUT

Crop Improvement

A promising new culture Chandrakalpa (Lakshadweep ordinary) released by AICRPP showed superiority to the extent of 55% over ECT. The yield of Chandrakalpa is 92 nuts/tree/year as against 60 nuts/tree/year in ECT. It is also superior in copra out-turn and is tolerant to drought and least susceptible to rhinoceros beetle

Crop Management

Chemodiagnastic techniques through EDTA (Ethylene Diamine Tetraacetic Acid) suggested that the O.D values were higher in both leaf and root extracts of Thanjavur wilt affected palms than apparently healthy ones. This indicated that both the leaf and root samples could be used for early diagnosis using EDTA reagent.

Crop Protection

For the control of coconut scale, **Aspidiotus destructor**, monocrotophos 0.036% was found to be superior, closely followed by the soil application with phorate 10% G @ 40 g/palm. Dimethoate 0.03% spray was ineffective in the control of scale.

Application of naphthalene balls (3 Nos)/seedling in the leaf axis and repeated at 45 days interval was found very effective affording maximum protection from **O.rhinoceros** closely followed by the application of HCH 10% with sand.

COTTON

Crop Improvement

TCHB 213 : It is an interspecific hybrid (**G.hirsutum** x **G.barbadense**) with a mean kapas yield of 26.8 q/ha as against 18.4 q/ha for TCH 32. In the overall performance, it recorded 25 q/ha registering 41% yield increase over TCH 32. Its ginning out-turn is 32 per cent and span length 32.8 mm. It is capable of spinning 80 counts. It is resistant to **Alternaria** and **Myrothecium** leaf spot.

Promising cultures

The **hirsutum** culture TCH 1002 ranked first in all India trials with a mean seed cotton yield of 31 q/ha as against 28 q/ha by MCU 5, the yield increase being 22%.

A superior medium staple cotton TSH 164 with a duration of 135 days was found superior to MCU 7 at Srivilliputhur.

At Aduthurai, TADH 8656 was found to be superior to MCU 7 and was advanced to ART.

Crop Management

Foliar application of $ZnSO_4$ on 45th, 65th and 85th d after sowing in irrigated cotton was found to be beneficial.

Spraying of 3% $MgSO_4$ on 45 DAS recorded high cotton kapas yield at Kovilpatti.

Crop Protection

At Aruppukottai, studies on the comparision of the catches of pink bollworm **Pectinophora gossypiella** was done with sticky trap, magic trap, tin trap and water pan trap. The water pan trap ranked first with a catch of 58.63 males/week while in others it ranged from 11.19 to 1.13 males/week.

Studies on the management of **Heliothis armigera** in cotton revealed the following :

The feeding preference of larvae in multiple choice test revealed that bengal gram was the most preferred host, followed by redgram, bhendi and cotton. Tomato was the least preferred.

Endosulfan had the lowest toxicity to the larvae reared on redgram followed by cotton while the synthetic pyrethroids had the lowest toxicity to larvae reared on cotton followed by redgram. The results indicate that **H.armigera** cannot be controlled by one and the same insecticide on redgram and cotton.

Age of larvae was related to the susceptibility to insecticides. The reonate and first instar larvae recorded a mortality of 100% and eggs were susceptible to a lesser extent only (10 to 18% The second and third instar larvae were susceptible to an extent of 72.5 to 97.5% respectively. The grown up larvae were killed to a lesser extent by the recommended insecticides.

In the adulticide effect of insecticides, endosulfan caused 28% mortality, deltamethrin, cypermethrin and fenvalerate caused 44%, 44% and 23% mortality respectively. Ovipositional deterrency was observed on treated plants; 150-200 eggs were laid by a single female on untreated plants. These results showed that three days after spraying, moths present in the ecosystem are killed to varying levels by the recommended insecticides. This is an additional beneficial effect which will reduce egg-laying by moths subsequently

SUGARCANE

Crop Improvement

Varieties released

COC 90063 : Culture C 81555 developed through biparental cross of CO 63044 x COC 671 was released as COC 90063. It is an errect, tall growing, non-lodging, non-flowering variety with medium internode and profuse tillering. The variety is suitable for early season planting (December-January). It is capable of yielding 125 t/ha in 300-330 days crop duration. The ratoon crop has a yield potential of 118 t/ha. It has moderate resistance to red

rot disease and is recommended for cultivation throughout Tamil Nadu.

CO 8021 : It is a derivative of cross CO 740 x CO 6806. This variety is suitable for Coimbatore, Periyar and Salem districts. This variety gives an average cane yield of 131 t/ha in 300 days of crop duration and registered a high sugar recovery of 14.5 t/ha.

Promising cultures

At Melalathur, the clones G 85003, G 85160 and G 85078 were found to be promising and were advanced to coordinated Agronomic Experiments for testing in farmers' fields.

Crop Management

Studies on drought tolerance in sugarcane revealed that setts soaked in ethrel 200 ppm or lime solution (80 kg Kiln lime in 400 litres of water) for one hour and planted in deep furrows of 30 cm depth, combined with spraying of potash with urea at 2.5 per cent each during moisture stress period at 15 days interval registered 130.0 t/ha of cane yield as against 104.0 t/ha in the control. The sugar yield was 17.8 t/ha which was 28 per cent higher than control. By adopting the above technology, a net profit of Rs.5760/- can be realised from a hectare of sugarcane.

Studies on the effect of pressmud and the application of zinc on the yield and quality of sugarcane indicated that the pressmud application at 15 t/ha along with foliar spray of 0.5% zinc sulphate resulted in significant increase (5-7 t/ha) in cane yield and sucrose content (1.0%).

Delineation of regions for micronutrient deficiencies in sugarcane areas of Trichy and Periyar districts indicated that zinc was dominantly deficient in Periyar (90% deficient) and Trichy (60% deficient) districts followed by iron (20% in Periyar and 15% in Trichy district).

Crop Protection

Evaluation of insecticides against sugarcane scale insects revealed that plots treated with dimethoate 0.06% on 120th and 150th day after trashing was found to be effective in bringing a reduction of 62% scale insect incidence over control. It was followed by malathion 0.1% spray in which 38.6% reduction was observed over control.

Aerated steam treatment (AST) with fungicides was found to be effective in controlling sugarcane smut. Among the treatments, AST with carbendazim 0.05% followed by AST + captofol 1% gave effective control of smut incidence as against control.

FORAGE CROPS

Crop Improvement

Promising cultures

Four hybrids viz., CH2 (PT 1697 x FD 481), CN 7 (126D2A x FD 481), CN8 (8369 A x FD 488) and CN 13 (L 111A x FD 476) were found to be promising and they were advanced to MLT.

Crop Management

CO 1 cumbu - napier hybrid grass could be profitably raised under irrigated conditions in North Western Zone to achieve a green fodder yield of 250 t ha^{-1} per year with high protein yield (8.1 t ha^{-1}) and palatability through high leaf-to-stem ratio.

BIOTECHNOLOGY

RICE

Studies on the response of anthers of **indica** and **japanica** varieties and their hybrids for **in vitro** culture revealed that MS medium supplemented with 2,4-D (2 mg/l) and kinetin(0.5 mg/l) was good for callus induction in almost all the genotypes studied. The frequency of callus induction ranged from 15.0 (Oozora x Vaigai) to 37.6 (Zulio x IR 50) per cent. The regeneration efficiency on MS + BAP (1 mg/l) + IAA (1 mg/l) + coconut water (5%) and yeast extract (250 mg/l) ranged from 35.2 (Norin 6 x AC15) to 61.7 (Norin x IR 50) per cent.

FINGER MILLET

Among the three varieties (CO 11, CO 12 and CO 13) tried for **in vitro** response, seed callus induction was high in CO 11 on MS medium supplemented with 2,4-D (3 mg/l) + kinetin (1 mg/l). On regeneration medium shoot primordia formed within 15 days and the regenerated plants established well. This study was made with an objective to develop salt tolerant varieties through tissue culture.

PEARL MILLET - CUMBU

Inflorescence of culture of the variety CZP 87 has led to the development of plantlets on N6 medium for the isolation of somaclonal variants.

CENCHRUS

A tissue culture technique has been developed to regenerate whole plants from callus cultures derived from immature embryos of **Cenchrus glaucus** (FS 39) on MS medium and the regenerants

were screened for the isolation of sexually reproducing types.

GROUNDNUT

With a view to rescue the embryos from incompatible combinations between cultivated varieties (CO 2, TMV 2, TMV 10) and wild species (**A.pusilla**), embryo culture was done and a suitable technique has been developed to recover plants from the selected cross combinations through somatic embryogenesis.

SESAMUM

For the development of haploids through anther culture, 12 cultivars and five hybrid combinations were studied. Two cultures TNAU 12 and TNAU 22 and one hybrid (HSP 3) responded for callus induction and only one genotype viz. TNAU 12 responded for meristematic structures and root formation.

COCONUT

Callus growth was observed from very young leaf tissues obtained from seedlings (T&D) cultured on y^{-3} or MS medium supplemented with high concentrations of 2,4-D or 2,4-5T in about 12 weeks after culture. But the calli on further subculture did not grow further for differentiation.

REDGRAM

Fertilized ovaries from cross combinations of **Cajanus cajan** (VPA5 120) x **Atylosia scarabacoides** were cultured on MS medium supplemented with BAP (1 mg/l) + sereine (100 mg/l). Callus formation occurred. Further sub-culture led to the formation of somatic embryos.

FOOD SCIENCE AND NUTRITION

Studies for increasing nutritional quality and organoleptic quality of *idli* revealed that idli cakes prepared under natural fermentation conditions by inoculating all three efficient microbial strains **viz.**, **Torulopsis holmii** MAB 3, **Lenconostoc mescenterides** MSC 1, and **Lactobacillus viridiscens** NCIM 2167 contained increased amount of free sugars (4.2g), protein (13.4 g), thiamine (0.82 mg), riboflavin (0.59 mg), arginine (7.6 mg), lysine (4.9 mg) and methionine (2.0 mg) per 100 g of idili. Among the individual strains, the proven strain **Lactobacillus viridiscens** NCIM 2167 produced 0.78 mg of thiamine and there was no much difference in amino acids production between the indigenous and proven microbial strains. The idili cakes prepared by inoculating all microbial strains were found to possess highly acceptable flavour, soft and spongy texture and very good taste.

The idli batter volume was increased appreciably in the substrate

ratio (rice: blackgram) of 4:1 (302 ml) followed by 3:1 (287 ml) fermented by the inoculation of all three efficient microbial strains together for 18 hours of fermentation at which the total acidity (3.5 g) was high and the pH (4.5) was low. In idli and dosai, free sugars were found to be maximum in 4:1 ratio followed by 3:1 during 18 hours of fermentation.

BREEDER SEED PRODUCTION

The breeder seed production programme has been formulated based on the consolidated indent received from the Director of Agriculture which includes the breeder seed requirement of corporate bodies and seedmen. The details of breeder seed production and supply during the year 1989-90 and the programme for the year 1990-91 are furnished below.

Sl.No.	Crop	Breeder seeds supplied during 1989-90 in quintals	Programme for 1990-91 in quintals
1.	Rice	196.60	203.85
2.	Millets	1.16	8.06
3.	Pulses	129.90	682.60
4.	Oilseeds	1163.40	1105.55
5.	Vegetables	1.72	8.50
6.	Cotton	17.69	113.00
7.	Forages	3.50	5.00
		1513.97	2126.56

HORTICULTURE

POMOLOGY

MANGO

Crop improvement

Variety released

PKM 2 : It is a high yielding regular bearing mango hybrid (Neelum x Mulgoa), released in January'90 from the Horticultural Research Station, Periyakulam. It is capable of producing large sized fruits with high pulp, ascorbic acid and total sugar content. It comes to bearing from fourth year of planting and yields 2.45 t/ha in the eighth year of planting.

Crop Management

Soft wood grafting techniques for rapid multiplication of promising clones were standardised. Grafting after June-July resulted in good establishment of the grafts.

Among different treatments, corrugated fibre board cartons with fungicide treatment and covered with tissue paper was found to be good with minimum loss of weight (13.33%) during long distance transport. Big sized mangoes recorded minimum loss of weight as compared to small sized mangoes and hence mangoes should be graded before packing.

BANANA

Crop Improvement

A trial was carried out to find the effect of **Azospirillum** on poovan along with different doses of nitrogen keeping P and K constant. The treatment with normal dose of NPK (110:30:330 g/plant) along with azospirillum at 3rd and 5th month at 7.5 kg/ha gave the maximum yield of 16.77 kg/bunch with high number of hands (12.5), fingers (182.7), length of fingers (14.8 cm), girth of fingers (13.04 cm) and individual weight of finger (90.1 g). The cost/benefit ratio was 1:3.

In rasthali, azospirillum at 7.5 kg/ha with 110 g of N in two split applications at 3rd and 5th month had registered the maximum bunch weight of 19.0 kg/bunch with maximum number of hands (9.0) and number of fingers/bunch (101.0). The same treatment registered the maximum net profit with cost/benefit ratio of 1:2.57.

CITRUS

ACID LIME

Crop Improvement

Variety released

PKM 1 : A high yielding acid lime variety named as PKM 1 was released in January 1990. It has a yield potential of 37 kg/tree per year and is capable of producing large sized, highly juicy fruits with an ascorbic acid content of 34.29 mg/100 g of juice. It is less susceptible to leaf miner and citrus butterfly.

Crop Management

Acid lime trees budded on five different root stocks viz., Trifoliate orange, Troyer citrange, Rangpurlime, Rough lemon and Acidlime were compared with acid lime seedlings. Trees on rough lemon rootstock were the most vigorous both in terms of tree height and tree girth. Trees on Trifoliate orange recorded the least vigour. Trees on Rough lemon root stock recorded the highest yield both in number (1412) and weight of fruits (50.2 kg) per tree.

Crop Protection

Three sprayings either with mancozeb 0.2% or carbendazim 0.1% or Bordeaux mixture 1% were effective for the control of preharvest stem end rot in acid lime.

GRAPES

Crop Improvement

Promising cultures

In the gamma irradiated M1 population of Muscat, a promising variant with elongated bunches has been identified.

Crop Management

Staggered pruning was attempted to prolong the fruiting period over a long season. Pruning Pachadraksha during first week of December was optimum for summer crop, recording a mean yield of 264 bunches weighing 22.2 kg per vine. By staggering the pruning to December 21, the yield obtained was 392 bunches weighing 19.5 kg/vine. Pruning beyond January first week resulted in yield reduction.

Crop Protection

Two sprays of either dichlorvos 0.08% + Fish oil resin soap at 25 g/litre or dichlorvos 0.08% + Neem oil 0.1% at fortnightly intervals starting from 30 days after pruning were highly effective in reducing

the mealybug infection in grapes.

Application of phorate (20 g/vine) after pruning was very effective in controlling the nematode **M.incognita** in Mascat grapes.

PAPAYA

Crop Improvement

Promising culture

VPM.CP 11, a long fruited papaya type with high yield has been isolated at Vellore as a suitable papaya type for growing in North Arcot district.

Crop Management

Among the treatments, 375:250:250 g of NPK per tree applied in six splits recorded the maximum number of fruits (108)/plant with 6.35 g dried papain/fruit in CO 2 papaya.

Nitrogen applied at 300 g/tree/year in four splits recorded the maximum fruit weight (2.34 kg/fruit), flesh thickness (3.84 cm) and total soluble solid content (11.34 Brix). The high yield was associated with maximum tree girth, number of functional leaves, longer petioles and more chlorophyll content.

Post-harvest Technology and Processing

Papaya RTS (Ready to Serve) beverage prepared with 25% juice, 18° Brix, 0.2% acidity, 100 ppm preservative and mixed fruit flavour was highly acceptable among the people of all age groups. Papaya RTS packed with 200 G polyethylene film bags, sealed and pasteurised at 70°C for 5 minutes had only 60 days shelf life while RTS packed in bottles had a shelf life of more than eight months.

The papaya leather processed with ingredients **viz.**, pulp, sugar, starch, pectin and citric acid was more preferable to the leather processed with starch and pectin.

TAMARIND

Crop Management

In tamarind, the present propagation is through seedlings. In an effort to standardise a vegetative propagation technique, methods like cuttings, layering, grafting and budding were tried.

For the first time a vegetative propagation method in tamarind has been standardised and perfected. This method, whip cum inarching gave more than 90 per cent success.

Studies with soft wood grafting showed 46 per cent union.

BER

Crop Improvement

Promising Culture

Among the four commercial varieties under evaluation at the Regional Research Station, Aruppukottai since 1982, the variety Kaithali recorded consistantly higher yield (39 kg/tree) than the other varieties.

Crop Management

In an observational trial on the time of pruning of ber, consistantly high yield was obtained in the trees pruned during February and March. Pruning trees beyond April, greatly reduced the yield of fruits.

POMEGRANATE

Crop Management

Application of liquid paraffin at 1% concentration at 20 days interval twice during the month of June reduced the fruit cracking in Kabul variety of pomegranate under dryland conditions.

Crop Protection

Spraying dichlorvos 0.1 percent twice at pea stage and again 15 days later was found to be significantly advantageous in reducing the fruit fly incidence in ber.

OLERICULTURE

TOMATO

Crop Improvement

In the project on breeding hybrid tomatoes, seven parents viz., PKM 1, Marutham, Pusa Ruby, LE 60, LE 107, LE 175 and LE 206 were involved and 10 hybrids were evaluated. The highest fruit yield/plant (1.43 kg) was recorded in the hybrid PKM 1 x LE 60.

Crop Management

In the studies on the weed management of tomato carried out at Coimbatore, Pre-planting application of Goal 0.15 kg a.i./ha resulted in the effective control of weeds and also recorded the maximum yield of 40.2 t/ha against 26.0 t/ha in unweeded check.

A technique has been standardised to regenerate plants in high frequency directly from leafbits of tomato cv.Marutham through

in vitro culture.

Crop Protection

The results of experiments conducted at Mecheri during 1989-90 revealed that endosulfan 0.07% spray followed by NPV 125 LR/ha and another spray of endosulfan 0.07% were found to be significantly superior in controlling Heliothes armigera larvae. Maximum fruit yield of 35.0 t/ha was recorded compared to 24 t/ha in the untreated control.

BRINJAL

Crop Improvement

Variety released

Palur 1 : Palur 1 brinjal is a pure line selection from an ecotype introduced from Nagpur. It yields 25 t/ha in 150 days of crop duration. Fruits are medium sized, dark purple and glossy and possess high consumer acceptibility. It is specially suited for truck cropping to meet the demands of the city markets.

Crop Management

In brinjal CO 2, the results of three season experiments revealed that a combination of 150 kg of N, 30 kg of P and 30 kg of K with a spacing of 75 cm x 50 cm recorded the highest yield of 36.8 t/ha against 20.4 t/ha in untreated control.

Crop Protection

The infestation of **M.incognita** on brinjal var. PKM 1 was minimised by the application of phorate at 1 kg a.i/ha, seven days after transplanting.

CHILLIES

Crop Improvement

Variety released

PKM 1 : It is a hybrid derivative between accession No.1797 x CO 1. It is dwarf statured and suitable for southern districts of Tamil Nadu. It has a duration of 180 days and yields 3084 kg/ha of dry pods.

Crop Management

At the Agricultural Research Station, Paramakudi, in the local Gundu type, application of Azospirillum in combination with 56 kg of N/ha recorded the highest dry pod yield of 4.36 kg/plot of 16 sq.m. under semidry conditions as against 3.43 kg with 75 kg of N (recom-

mended dose), 2.14 kg with Azospirillum alone and 1.65 kg in the control without N and Azospirillum.

Crop Protection

Out of 82 accessions evaluated, five entries viz., CA 700-1, CA 700-2, CA 700-4, CA 700-6 and 700-7 were found to exhibit field tolerance to thrips with a score of grade 1, as against grade 7 in the local. Among the ten chemicals tried, Dicofol 0.036% was found to be the best in controlling the mite.

BHENDI

Crop Improvement

Promising cultures

Hybrid 7 and 8 are the two F1 bhendi hybrids possessing field resistance to yellow vein mosaic and heterosis for yield. These two cultures have recorded a calculated yield of 17.2 and 17.9 t/ha respectively during kharif season. These two F1 hybrids are under multilocation and also All India testing.

TAPIOCA

Crop Improvement

Promising culture

ME 120 Tapioca : It is a mosaic resistant high yielding selection from a population of open pollinated progenies of seedlings raised from seeds collected from IITA, Ibedan. It yields 50 t/ha in a crop duration of 11-12 months.

BUTTER BEANS

Crop Improvement

Promising culture

S 13 : This promising selection yields 3.46 tonnes of mature pods/ha with a seed yield of 1.87 t/ha. It has bold white seeds with very good cooking qualities.

FLORICULTURE

JASMINE

Crop Improvement

As a result of mutation breeding work in Jasmine, five economic mutants in **J.grandiflorum** and four in **J.auriculatum** were identified. These mutants were multiplied and were advanced to comparitive yield trial along with the released varieties.

ROSE

Crop Management

A study was conducted on salt tolerance of rose root stock. The results revealed that the root stock **Rosa borbonica** was tolerant to saline conditions. The length of scion sprouts and flower stalk length were appreciable besides the flower diameter which was also larger in those scions budded with **R.borboniana**.

TUBEROSE

Crop Management

Application of nitrogen at 150 kg/ha and potassium at 60 kg/ha under close spacing (30 x 5 cm) significantly increased the dry matter, number of spikes and yield/ha. The chlorophyll content as well as the uptake of nutrient were high with this treatment. This treatment combination was found to be economical with the cost benefit ratio of 1:2.42.

SPICES AND PLANTATION CROPS

TURMERIC

Crop Improvement

Promising cultures

Four turmeric single plant high yielding selections viz., TC 1, TC 2, TC 3 and TC 4 were advanced to MLT. At Bhavanisagar three selections viz., BS 15, BS 43 and BS 57 were identified for high yield and earliness. The yield increase was 38.7% (2444 kg/ha) in BS 43, 31.9% (23259 kg/ha) in BS 57 and 26.9% (22370 kg/ha) in BS 15 over BSR 1 (17360 kg/ha).

CORIANDER

Crop Improvement

Promising cultures

Accession No.695 was isolated in Coimbatore as a potential strain with a yield increase of 18% in kharif and 13% in Rabi over CO 2.

Another pre-release culture Accession No.287 in coriander had 8.9 per cent wilt incidence as against 41.1% in CO 2. This culture matures 14 days earlier than CO 2. Hence this may be suitable for the dry districts of Tamil Nadu.

Crop Protection

Studies on grain mould disease of coriander revealed that spraying carbendazim 0.1%, 20 days after grain set recorded the minimum

incidence of 3.2 per cent as against 26.1 per cent in control.

Two drenchings with carbendazim 0.1% one at the initial appearance of the disease and the second at one month interval recorded minimum incidence of 5.7 per cent root rot disease as against 38.8 per cent in the control.

GARLIC

Crop Improvement

Promising cultures

At the Horticultural Research Station, Vijayanagaram, eight accessions viz., ACC 14, 18,37,63,70,73,76 and 77 were selected for their high yield potential ranging between 16-23 t/ha.

CASHEW

Crop Improvement

Promising culture

M 15/4 : This promising culture was identified based on its yield performance over the past 19 years. This culture has recorded the highest cumulative mean yield of 16.7 kg/tree. The percentage increase in yield was 63 and 174 over VRI 1 and VRI 2 respectively.

Crop Protection

Among several chemicals tested, monocrotophos 0.05% was *found to be very effective in controlling shoot tip caterpillar and* leaf miner in cashew.

PALMYRAH

Crop Management

Post harvest Technology and Processing

Padaneer treated with potassium metabisulphide (KMS) at 200 ppm could be preserved for 8 hours under room temperature. Padaneer can be preserved by using physical methods such as heating and chilling upto 36 hours.

Tender nungu with peel or without peel can be stored in refrigerator upto 10 days. Unblanched samples of numgu are better than blanched ones with respect of outer colour of peel, colour of nungu, flavour and taste.

Crop Management

Coplanting of N_2- fixing trees as sources of Nitrogen

To evaluate the relative efficacy of N_2-fixing trees on the growth of **Eucalyptus tereticornis**, three N_2-fixing trees **viz., Casuarina equisetifolia, Leucaena leucocephala** and **Albizia lebbek** were coplanted with it in three proportions of 50:50, 34:66 and 25:75. Pure stand of **E.tereticornis** served as control. Plant height and diameter of the eucalypt monitored upto 18 months revealed no difference among the treatments. At 24 and 30 months however, growth of eucalypt coplanted with **A.lebbek** in alternate rows showed an increase suggesting the beneficial role of the N_2-fixing trees.

Intercropping with commercially mature E.tereticornis

Intèrcropping with trees without yield penalty is feasible only during the first 2 to 3 years of the trees' growth. Since leaf yielding crops are reported to be more shade tolerant, vetiver **(Vetiveria zinzanioides)** was raised in the interspaces of 7 year old **E.tereticornis.** After 12 months, the recovery of root was 40.4 per cent of normal crop suggesting that this crop can still be profitability grown with aged eqcaltypt trees.

Intercropping with Silk cotton

Intercropping of arables like sorghum, cowpea, lablab, cotton, sunflower and sesame with silk cotton was possible upto 3 years. Fodder grass BN 2 inhibited the growth of the tree during the initial six months itself. Cotton had an augmenting effect on tree growth during 7-12 months.

A Method for Storing Neem Seeds

Neem is a recalcitrant species and does not store well beyond 2-3 weeks of collection. Packing the seeds in earthern pots and bringing the pots upto neck level in 20-25% moist sand bed under a thatched shed prolongs longevity upto 3 months. The decline in germination was only 28% under this method compared to 82% in the seed stored in the ambient.

Use of presprouted seeds in Ailanthus excelsa and Harwickia binata

Empty containers due to dead and non-viable seeds pose a problem in container grown nursery. To avoid this, pre-sprouted seeds obtained by soaking for 24 hours followed by storing in wet gunny bags for 48 hours were advocated for **H.binata** and **A.excelsa.**

Crop Protection

Control of yellow hairy Caterpillar (*Eligma narcissus* on *Ailanthus triphysa*)

A field trial conducted to evaluate the insecticides showed spraying of monocrotophos 36 SC at 0.1%.carbaryl 50 WP at 0.125%, quinalphos 25 EC at 0.05% were equally effective (100% mortality) in controlling the pest followed by neem oil 2% (96.2% mortality) after 72 hours of treatment. Reinfestation of the larvae was almost nil in the trees sprayed with neem oil due to the antifeedant effect of neem oil deposits on the foliage.

AGRICULTURAL ENGINEERING

Hand operated Grader for Gingelly Seed

The unit is suitable for removing the smaller and bigger sized impurities and grading the gingelly seed into two grades.

The unit consists mainly of a feed hopper, rotary sieve assembly, main frame, outlets and a cover. The rotary sieve assembly is provided with three numbers of sieves of no.ISS 240, ISS 180 and ISS 100 for a length of 50 cm each and is rolled to a diameter of 36.0 cm. Inside the sieve assembly a screw of inner diameter 20.0 cm and 12.0 cm pitch is provided to convey the materials when the sieve assembly is rotated. The graded seed is collected through the inclined outlets. The capacity of the unit is 125 kg/hour. The cost of the unit is Rs.1500/-.

Seed Pelleting Equipment

This gadget consists mainly of an aluminium pot fixed at one end of a shaft. The pot is held at an angle of 35° to the horizontal and is rotated manually.

For pelleting, by using this equipment, the seed is charged inside the pot and rotated at about 50 revolutions per minute. Measured quantity of binding material such as gum acacia or rice gruel is also poured over the seed slowly so that the binder is dispersed all over the seed. The required quantity of pesticides, fungicides etc. mixed with wood ash in powder form is put on the seed which gets adhered to the seed well. The unique rolling and cascading action of seed obtained in this machine makes it possible for the uniform pelleting of seed.

The cost of the equipment is Rs.800/-. The capacity of the equipment is 2 kg per batch and 200 kg per day. The cost of operation is Rs.2.00/-per quintal of seed.

Hand held battery operated double spinning Disc sprayer

The salient features of this sprayer are : 1) It requires no petroleum fuel 2) Repair problems are minimum 3) Water requirement is only 60 per cent as compared to the traditional power sprayer 4) Field coverage is 0.30 ha/hr. 5) Cost of spraying by this sprayer is Rs.15.0 per ha. whereas those of power sprayer and Knapsack sprayer are Rs.30/- per ha and Rs.45/- per ha respectively and 6) Cost of the sprayer is Rs.1700 which is about half of the cost of the power sprayer.

The sp. ayer can also be made triple spinning disc sprayer with little alterations which will cost Rs.500/- extra but will have good field coverage (0.45 ha/hr). The multiple spinning disc sprayers are suitable for paddy, groundnut, vegetables and other spreading type of crops.

Korai Splitter

The . orai Splitter consists mainly of two horizontal jaws, out of which one is fixed and the other is a movable one. The movable jaw is actuated by a foot pedal machanism. The fixed jaw is provided with 15 grooves for placing the korai in them. The top movable jaw is provided with 15 needles and they are moved vertically along the two vertical pillars. At the top of the fixed jaw, fine holes are provided for allowing the needles to pass through the Korai. For splitting the Korai, the material is inserted in the fixed bottom jaw holder horizontally and the foot pedal is actuated so as to insert the vertical needles through the vertical holes. After the needles pierced over the Korai straw, the entire 15 nos. are tightly fixed by a jig and pulled out so that the korai is split. The split korai is then dried for making mats. The capacity of the unit is around 60 kg per hour. The cost of the unit is Rs.1000/-.

WATER TECHNOLOGY

Sprinkler Irrigation for Blackgram

Irrigating blackgram 2.5 cm depth four times through sprinklers yielded 1505 kg/ha with highest water use efficiency of 4.38 kg/mm/ha. A quantity of 100 mm of water was used for irrigation. The effective rainfall was 243 mm out of total rainfall of 333.9 mm. The water consumed was 343 mm. The results revealed that with the same quantity of water, irrigated area of blackgram could be doubled by spraying water through sprinklers and at the same time get the same yield as in the case of surface irrigation.

Sprinkler Irrigation for Soybean

It was found that irrigation by sprinkler at 0.5 IW/CPE (at 2.5 cm depth) was the best with respect to water use efficiency,

recording 1697 kg/ha. Irrigation water used was 100 mm and water use efficiency was 4.77 whereas the surface irrigation used 200 mm of irrigation water and gave a yield of 1790 kg but the water use efficiency including the effective rainfall was 4.00.

Effect of irrigation schedules and phosphorus levels on cowpea :

Irrigating vegetable cowpea at 0.8 IW/CPE ratio with 50 kg P_2O_5 gave the highest yield (5.12 t/ha) with highest water use efficiency of 6.99 kg/ha/mm.

Moisture Stress Management in Rice Under Turn System of Irrigation :

The results indicated that under turn system, for short duration rice crop irrigation could be given once in 7 days during vegetative phase (0-45 DAS) and once in 5 days during the reproductive phase (46 DAS to 10 days prior to harvest.).

Application of extra dose of 50 kg N/ha over and above recommended dose in five equal splits at basal, 35, 45, 55 and 65 DAS in addition to Azospirillum was found to be ideal for normal grain yield.

Maximisation of yield in Rice :

A study was conducted to find out the best combination of irrigation regimes and spacing for obtaining maximum yield of ADT 36 rice during kuruvai and thaladi seasons of 89-90. The results indicated that for the new delta area of Thanjavur district, both for Kuruvai and thaladi seasons, 200 kg N/ha applied in four equal splits would give maximum yield of rice. In respect of plant population, 80 hills/m^2 and 50 hills/m^2 for Kuruvai and thaladi respectively may be adopted for maximum yields. Further, in Kuruvai season, irrigation once in 5 days and in thaladi season irrigation once in 7 days were found optimum for high yields.

AGRICULTURAL AND RURAL DEVELOPMENT STUDIES

Increasing Income and Employment through Optimal Farm Planning and Identification of constraints

With a view to explore the possibilities of increasing the productivity, income and employment of various size groups of farms through optimization, studies were made at Coimbatore, which revealed the following inferences.

1. In dry farms manure, fertilizer, bullock power and commercialisation are significantly influencing the income of the farm.
2. In irrigated farm fertilizer, labour and irrigation are significantly responsible for the gross income.

3. The optimal plans indicated considerable scope for reallocation of the existing resources available at farm level and

4. Strengthening extension work by developing many contingent plans, introduction of appropriate dryland farming techniques, fodder distribution for livestock enterprise, farm diversification by introducing enterprises like sericulture, poultry and mushroom were some of the policies suggested in this study.

Study on the Impact of Commercial Grading at Producers Level

A study was conducted in Periyar District to assess the impact of commercial grading scheme implemented by the Department of Agricultural Marketing, Govt.of Tamil Nadu.

Out of the 20 sample farmers interviewed, all of them have marketed their produce through regulated markets and 10 of them have also marketed through private traders. Out of 75 per cent of the sample farmers who have heard of commercial grading scheme, only 40 per cent have actually adopted commercial grading. About 11.33 per cent of the total quantity marketed was actually graded by the farmers. Fifty per cent of the farmers do not have any idea about grades followed in the scheme. Graded produce realised a three per cent increase in the value of the produce.

Out of 10 traders interviewed only six traders (60 per cent) have heard of the scheme and only two of them have purchased the graded produce at least once.

Scheme for Training Rural Women for Enterpreneurial Development in Production and Marketing of Edible Mushroom

To encourage the participation of rural women in rural development, 75 women were tried in the production and marketing of edible mushroom in Madurai region.

The trained women agreed that mushroom production was very convenient for small scale operation and it fitted well with their household responsibilities. It was also economically very remunerative. Production at the rate of 5 kg/day for 300 days in a year brings a net return of about Rs.16500/- per year. Most of the labour used in production and sales was provided by the family members. Except for a small investment to buy equipments such as autoclaves, most of the raw materials required for mushroom production were available locally. Lack of credit for initial investment and weak market facilities were the major constraints faced by the women.

An Economic Analysis and Formulation of Optimum Crop Mix for the Rainfed Tract of Madurai

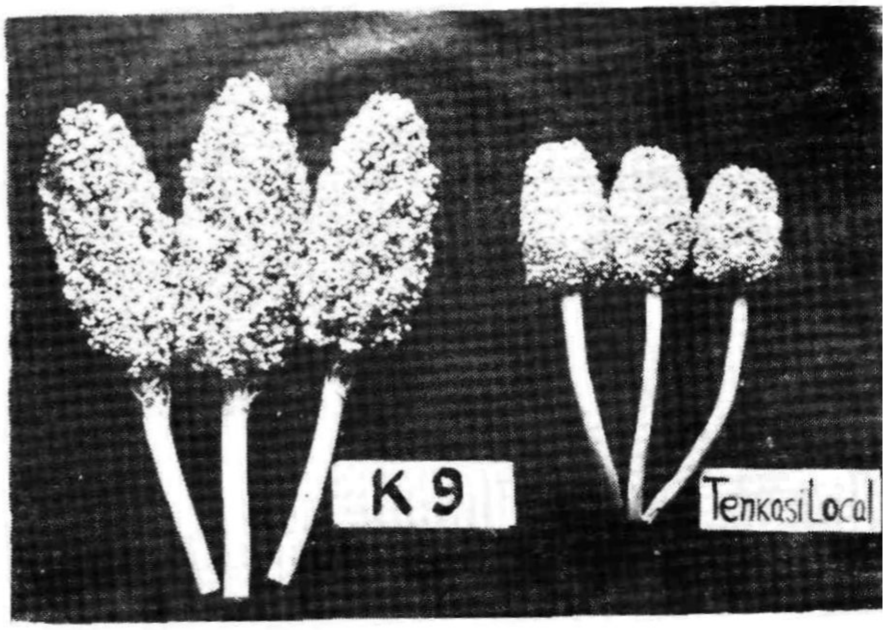
To analyse the existing cropping pattern and formulate an alternate optimum production strategy, this study was undertaken in Thirumangalam taluk of Madurai district which is frequently affected by drought.

The MOTAD model employed in this study would minimize risk for any given level of income. The plans so developed for three size groups of farms indicated that it would be efficient to include irrigated chillies and milch animals to increase farm income without much risk. This implied that mixed farming would help the farmers of this taluk to stabilise their income.

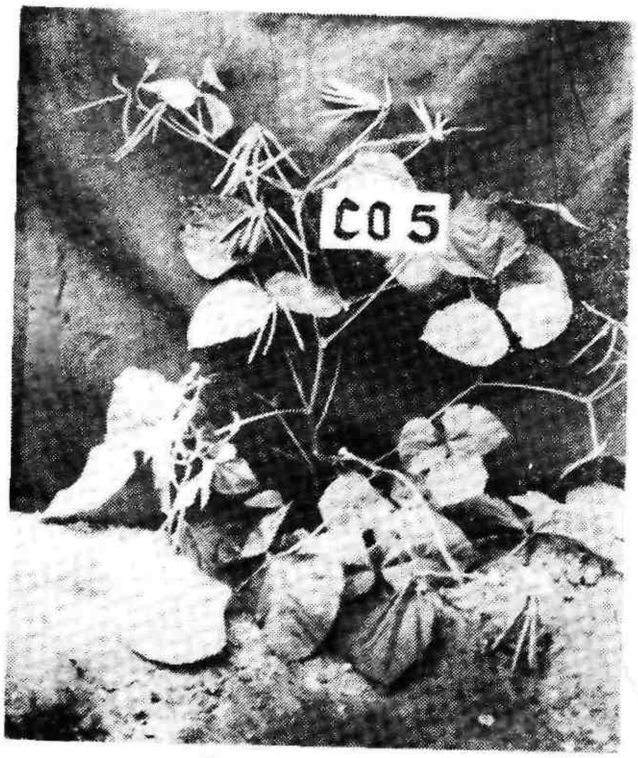
Study on Rural Levels of Living, Nutritional Status, Energy Use Pattern and their Demographic Determinants

The study revealed that the diet of the rural people in Coimbatore, Salem, Periyar, Dharmapuri, Madurai, Ramanathapuram and Pudukottai comprised mainly of cereals and little of vegetables. Though variations were observed between income groups, caste groups and occupational groups and between blocks the diet of the rural people was in general deficient in energy, protein, beta carotene, riboflavin and ascorbic acid. There was lack of awareness among the rural population on the importance of nutrition for health.

Rice - Co 45

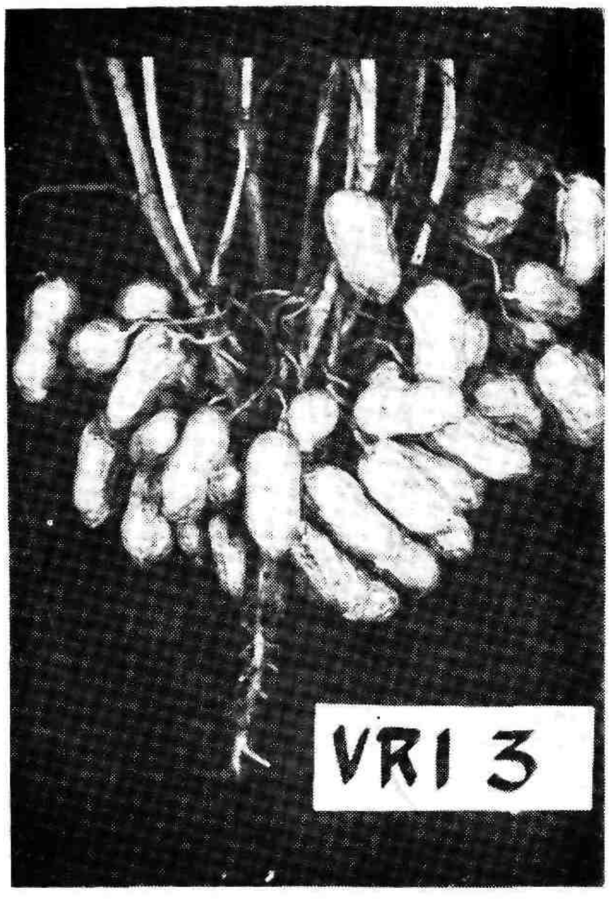


Sorghum - K 9



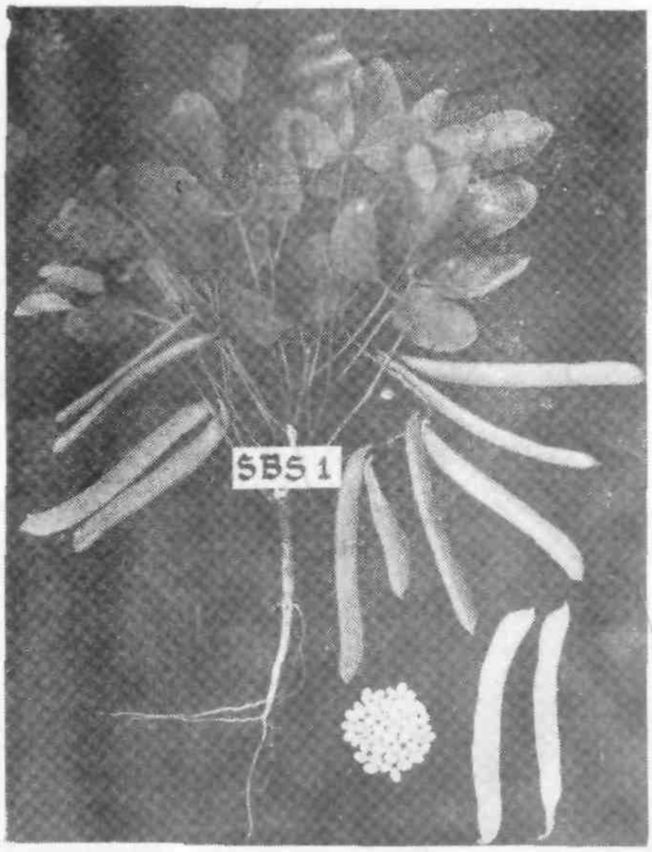
Greengram - Co 5

Sugarcane - CoC 90063



Groundnut - VRI 3

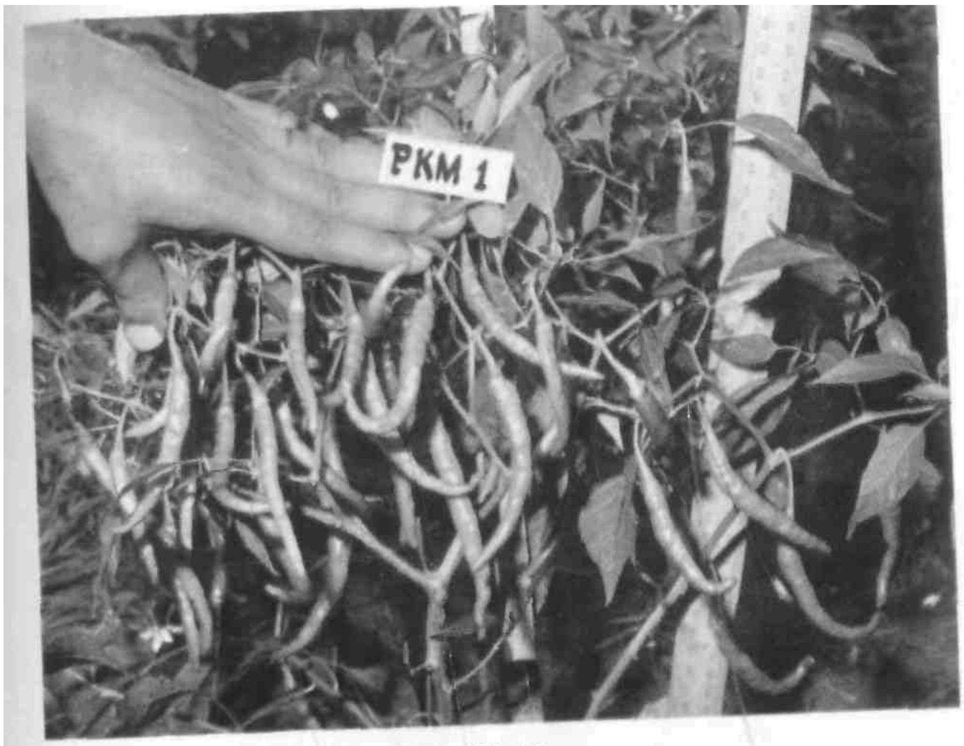
Soybean - ADT 1



Sword Bean - SBS 1

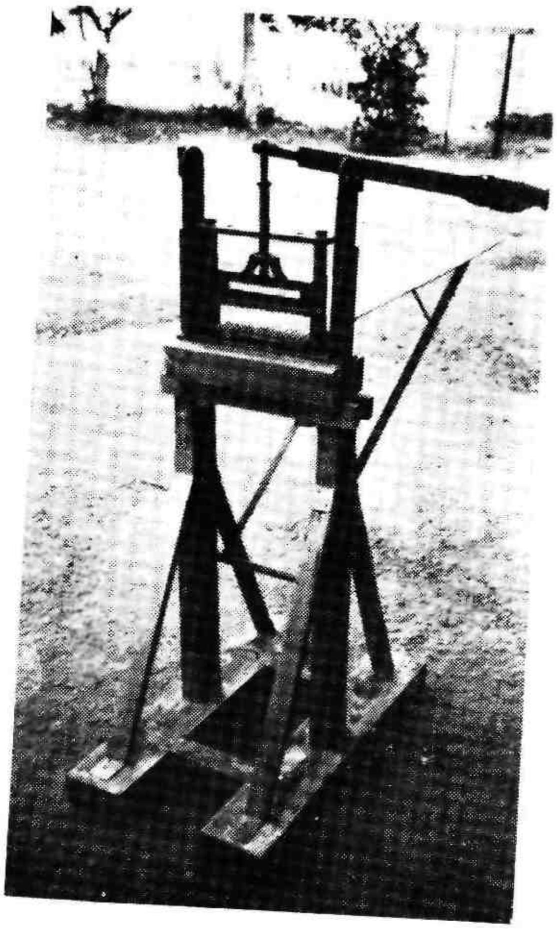
Mango - PKM 2

Acid lime - PKM 1



Chilli - PKM 1

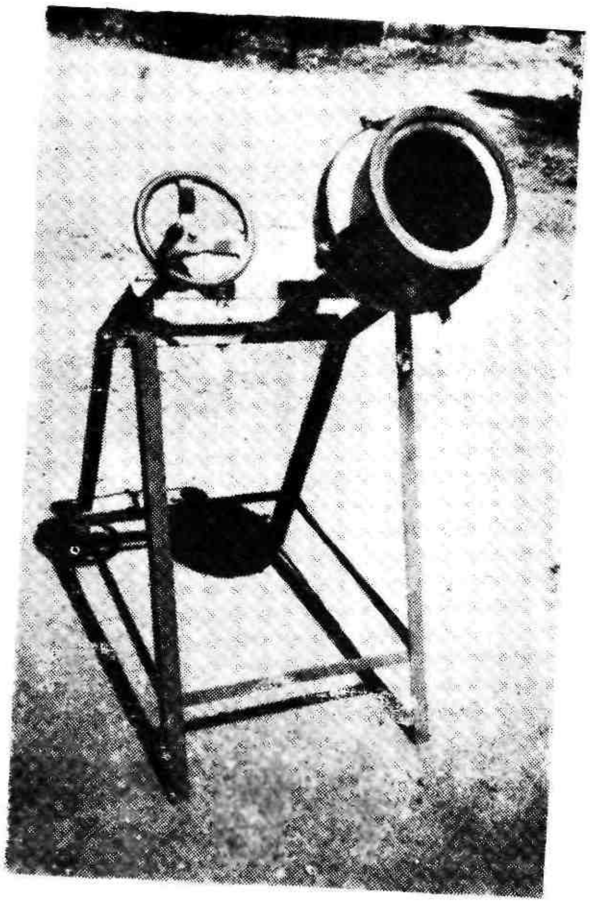
Acacia holocerisea



Korai Spliter

Gingelly Grader

Battery Operated Spinning Disc Low Volume Sprayer



Seed Pelletiser

5. EXTENSION EDUCATION

The Directorate of Extension Education and the various Tamil Nadu Agricultural University Extension Education Centres are engaged in the transfer of technology emerging from the research programmes of the University. The details regarding the extension education activities of the Directorate of Extension Education are furnished below:

Krishi Vigyan Kendras

The six Krishi Vigyan Kendras located at Coimbatore, Madurai, Trichi, Vridhachalam, Kattupakkam and Pondicherry conducted on-campus and off-campus training programmes on agriculture and allied activities. A total of 895 training programmes were conducted and the beneficiaries included 20624 farmers, 8459 farm women, 1711 extension workers, 1859 youths and 197 other categories of personnel. In addition, these centres carried out 182 demonstrations, 184 group/village meetings, 20 farm/field days, 6 farmers' days, 943 farm advisory services and answered 5047 farmers' queries. Besides this, 38 articles were published in dailies/farm magazines, 82 radio programmes/announcements were broadcast over All India Radio, 66 publications were brought out and 161 slide/film shows were conducted and 68 exhibitions and 34 campaigns were organised as part of their mass media utilisation activity.

Plant Clinic Centres

The scientists of the five Plant Clinic Centres at Vellore, Namakkal, Tirur, Killikulam and Srivilliputhur periodically visited the farmers' holdings, identified pest and diseases problems and suggested suitable remedial measures. These clinics also conducted on-farm testing of pre-release cultures of various crops, management practices and plant protection methods besides undertaking surveillance work for the purpose of forecasting the outbreak of pests and diseases. Preparation of calender for pests and diseases, predicting formula for important pests and diseases and conducting case studies were the other activities of these clinics. The plant clinic centres carried out 138 trainings, the beneficiaries being 1922 farmers, 620 farm women, 1359 extension workers and 260 youths. Besides individual and group contacts, 157 demonstrations, 96 village/group meetings, 19 farm/field days and 5 farmers' days were conducted. These centres also organised 911 farm advisory services, answered 1096 farmers' queries, published 73 articles in dailies and farm magazines, broadcast 18 radio programmes, released 13 publications, organised 6 slide/film shows, 8 exhibitions and 4 campaigns.

National Demonstration Scheme

The ICAR sponsored scheme functioning at Namakkal conducted demonstrations in rainfed and multiple cropping systems in the farmers'

holdings for proving the feasibility of achieving maximum output by following various recommended practices. It organised 12 training programmes, 22 skill demonstrations/block demonstrations, 6 village/group meetings, 13 farm/field days besides publication of articles in dailies/farm magazines and 3 slide/film shows

Scheme for the upliftment of Scheduled Castes and other backward communities

The All India Co-ordinated project on scheduled caste area research is functioning at Aruppukottai. The project aims at improving the socio-economic conditions of the scheduled castes besides undertaking efforts to remove the poverty among them. During the period under report 15 Group meetings cum method demonstrations were conducted on low cost and no cost technologies of groundnut crop production. The other extension education activities that were carried out include 14 training programmes, 26 demonstrations, 37 village meetings, 1 farmers' day, 1 radio programme, publication of 6 articles in dailies and farm magazines, 5 exhibitions and 1 campaign. Scheduled Caste women were given sufficient training on methods of cooking of cereals and vegetables, child nutrition and feeding, personal hygiene and sanitation and establishing minor orchards. The use of solar cooker and Janata cooker was popularised. As income generating activity, oyster mushroom cultivation was taken up with a group of Scheduled Caste families. Smokeless chulahs were introduced among Scheduled Caste families.

Communication Centre

The Communication Centre at TNAU main campus, Coimbatore disseminated the innovations of the University by various methods. They are, in the form of answering 2211 farmers queries, writing 31 articles in dailies and farm magazines, publication of 40 extension literature, 14 radio programmes, 4 TV programmes and organising 17 exhibition. The centre also conducted distant learning programmes like farm school on All India Radio and Correspondence Courses.

Lab to Land Programme

Under the Lab to Land Programme of the ICAR 300 farm families adopted during 1988-89 were continued during 1989-90 also in the six TNAU Centres. The six Krishi Vigyan Kendras at Coimbatore, Madurai, Trichy, Vridhachalam, Kattupakkam and Pondicherry were given 50 families each for adoption. Technological guidance and input support were rendered by the Kendras to the families in agriculture, animal husbandry, home science, agricultural engineering, sericulture etc.

Distant Learning Programmes

1. Farm School on All India Radio

The lessons relating to *resource management*, integrated pest, disease and weed control, pulses production and control of cattle diseases were offered during the period under report benefitting 2281 registered farmers and thousands of other farmers indirectly.

The one day contact programme for the farm school on All India Radio courses on integrated nutrient management, resource management, improved farm implements and integrated pest, disease and weed control were conducted. About 676 registered farmers attended the contact programmes. Practical training on the concerned subjects were given by organising skill demonstrations, exhibitions, group discussions etc.

2. Correspondence Courses

Thirteen courses on poultry rearing, sugarcane cultivation, new economic irrigation devices, seed production, farm implements and machinery, turmeric cultivation, paddy cultivation, sericulture, cotton cultivation, new method of plant protection in farm management, new dairy farming, forage crops and vegetable cultivation were offered for which 678 farmers had been enrolled. A three day contact programme was organised for the above courses. One hundred and eighty four registered farmers participated and got benefitted. Certificates were issued to the successful participants.

3. Cassette Lessons

New audio cassette lessons on sugarcane, mushroom, forage crops, cordamom and pepper and turmeric were prepared and 59 cassette lessons were distributed to the farmers on cost.

The Communication Centre took part in the National Science and Technology exhibition which was conducted at Ottapalam, in Kerala State.

4. Video Production Unit

The Video Production Unit involved in the production of video programmes on agriculture in addition to the programmes for telecast through Doordarshan Kendra, Madras. During the period under report 5 general programmes and 16 vayalum valvum programmes were produced and were telecast through Doordarshan Kendra, Madras. About 240 pre-recorded video cassettes were sold to Agricultural Officers and farmers. Further video coverage was arranged during the important functions of the University.

Training Unit

The training unit of the Directorate of Extension Education conducted 28 T&V training programmes benefitting 497 extension personnel during 1989-90. Besides this, a total of 12 training programmes were organised for the benefit of 220 other categories of extension personnel such as administrators, defence personnel, NDDB extension personnel etc.

Periodicals

1. TNAU Newsletter

This is a monthly journal published by the Directorate of Extension Education. Through this, the latest research findings and various extension activities were highlighted regularly and sent to all the Agricultural Universities, selected research organisations, developmental departments and scientists of India and abroad. At present 1000 copies are printed and distributed.

2. Valarum Velanmai

This is a Tamil monthly journal of the Directorate of Extension Education having 10,000 subscribers to its credit. Efforts are taken to increase the circulation of Valarum Velanmai by enrolling more numbers of life subscribers. Two special issues on Pongal and Chithirai were released during the period under report. It published 219 articles covering all the subjects of agricultural science.

3. TNAU Seithi Madal

This is a Tamil monthly newsletter disseminating the technologies in agriculture and allied subjects relevant to the season, variety and crops among the farming community and other officials of the development departments of the State. This Seithi Madal also carries important aspects such as seasonal and location specific recommendations, new findings, forecasting of pests and diseases, climatic changes and their impact etc. and functions as an effective tool in transfer of technology. At present 2000 copies are printed and distributed to the convenors of Farmers Discussion Group s of Krishi Vigyan Kendras, Farmers Training Centres and officials of the development departments of the State.

Agricultural Information Service

The regular flow of information is ensured to the extension workers and farmers through the Agricultural Information Service which is at the main campus. On all wednesdays timely and need based messages were processed and coined with the help of scientists and disseminated through all mass media. In this way 371 messages were disseminated to all kinds of mass media. Besides this,

this centre also issues daily press notes highlighting the ongoing activities of the University. During the period under report 2775 visitors received information from Agricultural Information Service. Every wednesday being the contact day, regular counselling is given to the farmers with the help of Heads of Departments and the Directors.

The messages processed and sent to various media during the period under report are as follows :

Department	No.of messages given
Agronomy	21
Soil Science	17
Agricultural Entomology	78
Plant Pathology	52
Microbiology	25
School of Genetics	13
Nematology	3
Crop Physiology	5
Seed Technology	11
Agricultural Extension	30
Agricultural Economics	24
Forage Crops	21
Bio-Chemistry	11
Horticulture	32
Agricultural Engineering	16
Water Technology	10
Forestry	1
Bio-energy	1
Total	371

Since May 1989, Agricultural Information Services have also been started at every Regional Research Stations of all agro-climatic zones.

Students' counselling and placement centre

This was started with the objective of counselling students to channalise their aspirations in the profession and to assist them to be better placed in different jobs. Students were encouraged to go for higher studies. The relevant advertisements collected from dailies/foreign correspondence/national institutes are placed on the notice boards of concerned departments and hostels and the needful counselling on those advertisements was also given to the needy students. The service clubs of organisations were approached for this purpose. Special lectures were also arranged to facilitate the students to get a deep insight into it.

The centre is also organising coaching classes for IAS and allied services. Based on the syllabus for these competitive examinations, the resource persons from various departments were identified. For the 35 registered students, coaching classes were conducted for 4 months during the period under report. In addition to the coverage of syllabus, model examinations were also conducted. The Centre also invited potential employers to the campus for campus interview, and conducted 10 campus interviews in Agriculture, Horticulture, Agricultural Engineering and Forestry and suggested names of potential graduates to a number of private firms for placement. The centre had also organised skill oriented training for the unemployed farm graduates on mushroom production, paper board making, mass preparation of banana seedlings through tissue culture, bio-fertilizer production and food processing. They were also provided with adequate technical support and making materials.

Innovative Activities of The Directorate of Extension Education

1. Incentives to the outstanding Farmers' Discussion Group

The local management committee of the Krishi Vigyan Kendra, Coimbatore held on January 8,1989 decided to give a television set to each of the two effective Farmers' Discussion Groups based on the recommendations of the sub committee of the Farmers Discussion Group constituted for this purpose. One best Men and Women Farmers Discussion Groups were selected and television sets were distributed to them.

2. Adipattam Campaign

Adipattam campaign in Tamil Nadu was initiated to promote kitchen gardening and tree planting during kharif at different campuses by Tamil Nadu Agricultural University. The Adipattam campaign at Coimbatore organised jointly with the Rotary Club of Coimbatore city and Thondamuthur was inaugurated on 19.7.89 under the chairmanship of the Vice-Chancellor. Thiru.M.Raman,IAS, District Collector, Coimbatore presided and Thiru.Hemanth Kumar Sinha,IAS, Commissioner, Coimbatore Corporation and Thiru.T.Varadaraj,President, Thondamuthur Rotary Club were present. This was followed by a tree planting at the college orchard. Scientists and students distributed vegetable seeds to the households of Coimbatore city and mass tree planting was done by students at main campus. During adi, a total number of 503 vegetable seed pockets and 70 coconut seedlings were distributed. Kattupakkam conducted 2 Adipattam campaigns and distributed 2000 packets of vegetable seeds and 300 fruit seedlings.

3. Scientists Students Corps for Agricultural Production

In this programme, the students are involved in improving the

agricultural production. The students along with scientists regularly visit villages and assist the farmers in solving the field problems.

4. Lady Farm Scientists Action Team (LFSAT)

Another innovation is the formation of a committee called Lady Farm Scientists Action Team (LFSAT) where lady scientists are entrusted with a duty of visiting villages and giving training and farm counsel to the farm women.

The achievements of the Directorate of Extension Education under training, demonstrations, other individual and group contacts and mass media utilization are presented in tables I to III.

TABLE I : NUMBER OF TRAININGSCONDUCTED

No.	Centre	No.of Trainings	Beneficiaries (Number) Farmers	Farm Women	Extn. Workers	Youths	Others
1.	K.V.K.,Coimbatore	108	3065	906	720	744	100
2.	K.V.K.,Madurai	85	3408	716	400	560	-
3.	K.V.K.,Trichy	236	6501	3584	-	-	-
4.	K.V.K.,Vridhachalam	170	3343	1720	305	175	-
5.	K.V.K.,Kattupakkam	209	3805	1410	-	-	-
6.	K.V.K.,Pondicherry	87	502	123	286	380	97
7.	P.C.C.,Vellore	26	490	250	110	130	50
8.	P.C.C., Namakkal	13	180	70	115	70	-
9.	P.C.C.,Tirur	38	325	116	365	-	315
10.	P.C.C.,Killikulam	39	334	138	414	20	-
11.	P.C.C.,Srivilliputhur	22	228	46	355	40	-
12.	SC.OBC Scheme, Aruppukottai	11	315	340	-	85	-
13.	National Demonstration Scheme,Namakkal	12	120	35	60	-	-
	Total	1056	22616	9454	3130	2204	562

TABLE.11. INDIVIDUAL/GROUP CONTACTS

Centre	Demonstrations	Compact Block	Village meetings	Farm/ Field Days	Farmers Days	Farm advisory services	Queries answered
1. *Krishi Vigyan Kendra*, Coimbatore	68	5	20	5	1	152	1500
2. Krishi Vigyan Kendra, Madurai	9	-	32	5	1	93	360
3. Krishi Vigyan Kendra, Trichi	28	-	26	2	-	65	300
4. Krishi Vigyan Kendra, Vridhachalam	20	-	42	2	1	140	425
5. Krishi Vigyan Kendra, Kattupakkam.	34	-	30	1	2	55	95
6. Krishi Vigyan Kendra, Pondicherry.	23	-	34	5	-	70	120
7. Plant Clinic Centre, Vellore	36	-	14	1	1	74	123
8. Plant Clinic Centre, Namakkal	50	-	20	12	1	197	119
9. Plant Clinic Centre, Tirur	33	-	20	2	1	184	621
10. Plant Clinic Centre, Killikulam	20	-	23	1	1	156	120
11. Plant Clinic Centre, Srivilliputhur	18	-	19	3	1	300	113
12. SC.OBC Scheme, Aruppukottai	26	-	37	-	1	-	-
13. National Demonstration Scheme, Namakkal	22	-	6	13	-	-	-
14. Communication Centre, Coimbatore.	-	-	-	-	-	-	2211
Total	387	5	323	52	11	1486	6107

TABLE.III. MASS MEDIA UTILISATION PROGRAMME

Centre	Writing to dailies & Farm Magazines	Radio Programmes	TV Programmes	Publications brought out	Slide/ Film Shows	Exhibitions	Compaigns/ Seminars
1. Krishi Vigyan Kendra,Coimbatore	12	18	-	33	20	11	6
2. Krishi Vigyan Kendra,Madurai	12	22	1	12	-	11	-
3. Krishi Vigyan Kendra,Trichy	-	10	-	10	-	8	14
4. Krishi Vigyan Kendra,Vridhachalam	14	18	-	1	107	22	3
5. Krishi Vigyan Kendra,Kattupakkam	-	-	-	2	-	3	1
6. Krishi Vigyan Kendra,Pondicherry	-	14	-	8	34	13	10
7. Plant Clinic Centre, Vellore	17	9	1	3	-	1	3
8. Plant Clinic Centre, Namakkal	26	19	-	2	4	-	-
9. Plant Clinic Centre, Tirur	4	14	-	1	-	-	-
10. Plant Clinic Centre, Killikulam	13	34	-	7	-	3	-
11. Plant Clinic Centre, Srivilliputhur	13	8	-	-	2	4	1
12. SC.OBC.Scheme, Aruppukottai	-	1	-	6	-	5	1
13. National Demonstation Scheme, Namakkal.	26	-	-	-	3	-	-
14. Communication Centre,Coimbatore	31	14	42	40	7	17	-
Total	168	181	44	125	177	98	39

Veerapandi Thiru. S. Arumugam, Hon'ble Minister for Agriculture, presenting TV set to the best Convenor Discussion Group

Farmers learn through Contact Programme in farm school on AIR

Inoculation to goats against diseases under lab to land programme

Training on Smokeless Chulas

Workshop on perspective development plan for Chengai - Anna District
at RRS, Tirur

Farmers at RRS, Ambasamudram

Pheromone Traps - Farmers with scientists of PCC, Namakkal

ZREAC Meet at RRS, Paiyur

Farmers' Day at RRS, Ambasamudram

APPENDIX I

IMPORTANT CIVIL WORKS COMPLETED

Main Campus, Coimbatore

1. Academic building
2. Recreation hall for students
3. Staff quarters
4. Microbiology laboratory
5. Ladies' hostel
6. Weed technology laboratory
7. Field laboratory for College of Forestry
8. Field laboratory cum workshop for College of Forestry
9. Glass cum wire house for College of Forestry
10. Water supply pipe line
11. False ceiling for tissue culture laboratory
12. Micro-plots for Plant Pathology
13. Extension of staff community hall

Agricultural College and Research Institute, Madurai

1. Screen house
2. Staff quarters

Tamil Nadu Rice Research Institute, Aduthurai

1. Fencing in the north farm

Coconut Research Station, Veppankulam

1. Laboratory building
2. Staff quarters

Vegetable Research Station, Palur

1. Staff quarters

Anbil Dharmalingam Agrl. College, Kumulur (Temporary buildings)

1. Office building
2. Library and staff room
3. Canteen
4. Cycle shed
5. Students' hostel
6. Mess building
7. Laboratory
8. Class room
9. Staff quarters

Horticultural Research Station, Periakulam

1. Staff quarters

Horticultural Research Station, Kodaikanal

1. Glass house

Agricultural College and Research Institute, Killikulam

1. Students' hostel
2. Kitchen cum dining hall
3. Vehicle shed

Regional Research Station, Vridhachalam

Lab-cum-office building

Krishi Vigyan Kendra, Kattupakkam

Lab-cum-office building

APPENDIX - II

LIST OF SCHEMES

University Research Schemes - Non-Plan

		1989 - 90 Revised Estimate (Rupees)
1.	Scheme for Improvement of Groundnut through Induction of Mutation, Coimbatore	64,000
2.	Scheme for Surveillance of Pests and Diseases, Vellore	95,000
3.	Scheme for Studies on the Residues of Pesticides in Plant and Soil, Coimbatore	2,64,000
4.	Scheme for Research on Citrus Die-Back, Tenkasi Coimbatore	1,09,000
5.	Scheme for Improvement of Redgram and Soyabean, Vamban	68,000
6.	Scheme for Evaluation of Cumbu Resistant to Green Ear and Ergot diseases, Kovilpatti & Vamban	95,000
7.	Scheme for Improvement of Sunflower in Tamil Nadu, Kovilpatti	1,33,000
8.	Scheme for Improvement of Wetland Pulses, Aduthurai	1,64,000
9.	Scheme for Co-ordinated Agronomic Experiment on Sugarcane, Cuddalore	2,66,000
10.	Scheme for Research on Nematode Parasites of Sugarcane Crop, Cuddalore	1,62,000
11.	Scheme for Biological Testing of Pesticides, Vamban	10,000
12.	*Scheme for upgrading Paddy Experiment Station, Ambasamudrum*	8,33,000
13.	Scheme for Establishment of Paddy Experiment Sub Station, Thirupathisaram	2,86,000
14.	Scheme for Establishment of Multicrop Experiment Station, Paramakudi	1,98,000
15.	Soil & Water Management Research Institute, Thanjavur	8,17,000
16.	Scheme for Establishment of Paddy Experiment Station, Tirur	10,28,000
17.	Scheme for Biological Testing of Pesticide, Kovilpatti	63,000
18.	Scheme for Biological Testing of Pesticide, Aduthurai	65,000

19.	Scheme for Biological Testing of Pesticides, Tindivanam	74,000
20.	Scheme for Research on Citrus Dieback, Coimbatore	15,000

University Research Schemes - Plan

1.	Scheme for Breeder Seed Increase, Bhavanisagar	3,03,000
2.	Regional Research Station, Aruppukkottai	6,22,000
3.	National Pulses Research Centre, Vamban, Pudukkottai	4,87,000
4.	Scheme for Strengthening and Co-ordinating Rice Entomological Research, Coimbatore	1,74,000
5.	Scheme for Strengthening and Co-ordinating Rice Entomological Research, Madurai	1,11,000
6.	Scheme for Establishment of Plant Clinic Centre, Vellore	1,25,000
7.	Scheme for Establishment of Plant Clinic Centre, Tirunelveli	97,000
8.	Scheme for Establishment of Plant Clinic Centre, Tirur	84,000
9.	Scheme for Development of Sugarcane varieties suitable for Southern Districts of Tamilnadu, Madurai	1,48,000
10.	Scheme for Research on Temperate Vegetables, Ooty	90,000
11.	Schemes for Research on Temperate Vegetables, Kodaikanal	43,000
12.	Scheme for Research on Temperate Vegetables, Thadiyankudisai	20,000
13.	Scheme for Establishment of Regional Laboratory, Trichy	1,33,000
14.	Scheme for Establishment of Règional Laboratory, Paiyur	1,29,000
15.	Scheme for Strengthening and Co-ordinating Rice Virus Diseases and Mycoplasma Diseases, Coimbatore	70,000
16.	Scheme for Strengthening and Co-ordinating Rice Virus Diseases and Mycoplasma Diseases, Madurai	1,15,000
17.	Scheme for Research on Bunchy Top Virus Diseases, Thadiyankudisai	66,000
18.	Scheme for Research on Improvement of Chillies in the Southern District of Tamil Nadu, Paramakudi	1,77,000
19.	Scheme for Research on the Improvement of Cultivation of Palmyrah Palm, Srivilliputhur	2,81,000
20.	Tumeric Research Scheme, Bhavanisagar	1,35,000
21.	Scheme for Development of Crop Pattern for different Agro-Climatic Zones, Coimbatore	1,13,000
22.	Scheme for Development of Crop Pattern for different Agro-Climatic Zones, Tirunelveli	90,000
23.	Scheme for Development of Crop Pattern for different Agro-Climatic Zones, Pattukkottai	68,000

24.	Scheme for Establishment of Seed Technology Unit, Madurai	1,39,000
25.	Krishi Vigyan Kendra, Coimbatore	4,50,000
26.	Krishi Vigyan Kendra, Madurai	3,90,000
27.	Scheme for the Hybrid Development by Mass Produetion of Haploid and Homozygous Plants in Hybrid Rice and Sorghum by Anther and Pollen Culture, Coimbatore	65,000
28.	Scheme for Intensification of Research on Medium Staple Cotton Types, Srivilliputhur	70,000
29.	Scheme for Intensification of Research on Medium Staple Cotton Types, Kovilpatti	62,000
30.	Scheme for Intensification of Research on Medium Staple Cotton Types, Aduthurai	46,000
31.	Scheme for the Intensification of Research on Medium Staple Cotton Types, Paiyur	65,000
32.	Scheme for Establishment of a Centre for Sericulture, Coimbatore	1,91,000
33.	Scheme for Starting of Post-Graduate Diploma in Plant Protection, Coimbatore	2,58,000
34.	Scheme for Evaluation of High Yielding Crop Varieties Suitable for Lower Bhavani Project Area, Bhavanisagar	79,000
35.	Scheme for Strengthening Research on Chemistry of Submerged Soils of Thanjavur District, Aduthurai	68,000
36.	Scheme for Establishment of Regional Laboratory, Yercaud	1,46,000
37.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Mettupalayam	57,000
38.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Vamban	26,000
39.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Tirunelveli	5,000
40.	Scheme for Research on Introduction of New Tree Species, Coimbatore	1,70,000
41.	Scheme for Popularisation of Agrl. Implements through Krishi Vigyan Kendra, Coimbatore	53,000
42.	Scheme for Popularisation af Agrl. Implements through Krishi Vigyan Kendra, Madurai	26,000
43.	Scheme for Evaluation of Medium Staple Cotton Suitable for Black Soil Rainfed Tracts of Southern Districts, Kovilpatti	60,000
44.	Scheme for Establishment of Rural Observatory Studies, Coimbatore	83,000

45.	Scheme for Seed Production and Seed Storage Studies in Sub-Tropical and Temperate Crops, Periakulam and Sub Centres Kodaikanal and Thadiyankudisai	1,00,000
46.	Scheme for Improvement of Groundnut Suitable for Rainfed Areas, Tindivanam.	76,000
47.	Scheme for Strengthening the Post-Graduate Teaching and Research in Agrl. Marketing Management, Coimbatore	78,000
48.	Scheme for Improvement of Forage Grasses, Legumes and Pasture Development in Regional Research Station, Aruppukkottai	37,000
49.	Scheme for Improvement of Forage Grasses and Legumes and Pasture Development in Regional Research Station, Paiyur	36,000
50.	Scheme for Research on Oil Bearing Tree Crops like Neem, Pungam and Silvagronomical Studies on Energy Fuel Yielding Wood Lots at Aruppukkottai	60,000
51.	Scheme for Research on Oil Bearing Tree Crops like Neem, Pungam and Silvagronomical Studies on Energy Fuel Yielding Wood Lots at Mettupalayam	27,000
52.	Scheme for the formulation of improved Agro-Techniques in Grapes Suitable for Dharmapuri District, Paiyur	98,000
53.	Establishment of a Centre for Nematode Pests of Crop Plants, Madurai	98,000
54.	Scheme for the Improvement of Brinjal varieties for North Eastern Region of Tamil Nadu, Palur	75,000
55.	Studies on the Causes of Low Soil Fertility in Chengleput District, Tirur	73,000
56.	Establishment of Seed Complex including Seed Health Testing and Training Centre, Bhavanisagar	1,16,000
57.	Scheme for Strengthening of Seed Production Programme at Multi-Crop Experiment Station, Pattukkottai	49,000
58.	Scheme for starting of Bio-fertilizer production and quality control unit, Coimbatore and Madurai	1,38,000
59.	Scheme for Research and Development of Forage Crops, Coimbatore	71,000
60.	Scheme for evaluating soil crusting and hardening problems in Tamil Nadu and to evolve suitable soil management practices, Pudukkottai	65,000
61.	Scheme for Intensification of Research on Soybean Cultivation in Tamil Nadu, Aduthurai	41,000
62.	Scheme for Intensification of Research on Soybean Cultivation in Tamilnadu, Paiyur	60,000

63.	Scheme for Strengthening of Coconut Research in Thanjavur District, Veppankulam	97,000
64.	Scheme for Establishment of an Advance Centre for Soil and Crop Management Studies, Coimbatore	1,33,000
65.	Scheme for the Establishment of Advance Centre for Studies on Plant Protection, Coimbatore	2,24,000
66.	Scheme for Strengthening of the Training Division in the Directorate of Extension Education, Coimbatore	2,46,000
67.	Scheme for Research on Improvement of Coriander and Vegetables, Aruppukkottai	66,000
68.	Scheme for Socio-economic Study on Tribal Welfare in the Lower Pulney Hills, Thadiyankudisai	44,000
69.	Scheme for studies on Production Physiology of Rice, Madurai	70,000
70.	Establishment of Plant Clinic Centre, Namakkal	1,43,000
71.	Establishment of Plant Clinic Centre, Srivilliputhur	80,000
72.	Scheme for Establishment of Agrl. Research Station in North Arcot District, Vellore	2,78,000
73.	Scheme for Strengthening of Estate Office, Coimbatore	2,20,000
74.	Scheme for starting of M. E. (Ag) Degree Programme in Post Harvest Technology, Coimbatore	5,000
75.	Scheme for studies on Materials and Methods of Farm Structures, Coimbatore	71,000
76.	Scheme for upgradation of Tamilnadu Rice Res. Institute, Aduthurai and also reorganisation of the set up in Directorate of Research, TRRI, Aduthurai	2,06,000
77.	Scheme for Studies on Wilt and Button Shedding in Coconut, Nagercoil	1,15,000
78.	Scheme for Development of Breeder Seed of Millets, Kovilpatti	1,51,000
79.	Establishment of Nematology Laboratory, Tirur	2,12,000
80.	Establishment of Nematology Laboratory, Trichy	2,11,000
81.	Scheme for Production of Breeder Seed in Paddy, Aduthurai	2,72,000
82.	Scheme for Multiplication and Distribution of Pulses, Vamban	1,33,000
83.	Scheme for Multiplication and Distribution of Pulses, Coimbatore	72,000
84.	Scheme for Multiplication and Distribution of Pulses, Tindivanam	1,22,000
85.	Strengthening of National Agrl. Research Project Centres, Paiyur	4,70,000
86.	Strengthening of National Agrl. Research Project Centres, Vridhachalam	3,10,000

87. Strengthening of Nationai Agrl. Research Project Centres, Aduthurai	5,53,000
88. Strengthening of National Agrl. Research Project Centres, Trichy	4,48,000
89. Strengthening of Directorate of Research, Coimbatore	2,55,000
90. Strengthening of National Agrl. Research Project Centres, Cuddalore	84,200
91. Strengthening of National Agrl. Rehearch Project Centres, Kattupakkam	84,200
92, Strengthening of National Agrl. Research Project Centres, Aruppukkottai	5,56,000
93. Strengthening of National Agrl. Research Project Centres, Nagercoil	1,06,500
94. Strengthening of National Agrl. Research Project Centres, Tindivanam	14,000
95. Strengthening of National Agrl. Research Project Centres, Srivilliputhur	20,000
96. Strengthening of Regional Research Station, Thadiyankudisai	3,88,000
97. Agricultural College & Research Institute, Killikulam	60,02,000
98. Water Technology Centre, Coimbatore	8,59,100
99. Strengthening of Breeder Seed Programme, Vridhachalam	83,000
100. Strengthening of Breeder Seed Programme, Tindivanam	1,22,800
101. Strengthening of Breeder Seed Programme, Kattupakkam	37,000
102. Commercial Exploitation of Heterosis in Rice, Aduthurai	82,000
103. Strengthening of Radiation Research Centre for Crop Management Studies, Coimbatore	1,60,000
104. Studies on Epidemiology and Integrated Management of Rice Plant Diseases, Coimbatore	84,000
105. Fortification of inbred lines of sorghum with genes for high combining ability and downy mildew resistance for evaluation of varieties and hybrids, Coimbatore	1,19,000
106. Studies on behavioural control of polyphagous lepidopterous pests, Coimbatore	67,000
107. Micropropagation of Horticultural Plants, Coimbatore	27,000
108. Development of suitable strains of Azospirillum for commercial crops, Coimbatore	67,000
109. Development of model for growth of Crop Plants, Coimbatore	1,27,000
110. Creation of New Department of Bio-Technology, Coimbatore	1,50,000

111. Development of Tamarind tree, Pottaneri	61,000
112. Exploitation of hybrid vigour and development of superior hybrids in redgram, Coimbatore	1,10'000
113. Biological control of soil borne plant pathogens, Coimbatore	74,000
114. Studies on the decline in the yield of grapes, tomato and brinjal due to nematodes and fungus complex, Periyakulam	1,37,000
115. Improvement of nutrient value of foods utilising specific microbial strains in traditional fermented foods, Madurai	89,000
116. Scheme for Establishment of Video Library, Coimbatore	2,70,000
117. Research on Forestry aforestation of saline soils in Tamil Nadu, Trichy	54,000
118. Integrated Farming System Management, Soil and Crop Management Studies, Madurai	1,32,000
119. Scheme for setting up a remote sensing user cell, Coimbatore	52,000
120. Separate division cf Publications, D. E E., Coimbatore	85,000
121. Scheme for Investigation on the Management of Pests and Diseases of Hill Fruits and vegetable Crops on the Nilgiris, Ooty	70,000
122. Scheme for Improvement of Minor Tuber Crops, Madurai	43,000
123. Scheme for Selection of Grape Cultivars for Drought and Salt tolerance and Standardization of Agro-techniques, Coimbatore	70,000
124. Starting of P. G. programme leading to M. B. M., CARDS, Coimbatore	1,82,000
125. Scheme for the establishment of Laboratory for Survey and Research on Golden Nematode of Potatoes at Uthagamandalam	1,14,000
126. Scheme for Management of Virus Diseases of Horticultural Crops, Coimbatore	67,000
127. Scheme for Isolation and Popularisation of Superior Genotypes of Matchwood trees, Mettupalayam	1,06,000
128. Scheme on Research on Sugarcane Crops, Sirugamani, Melalathur	60,000
129. Banana Research Station, Vellore	3,69,000
130. Scheme for Vegetable Seed Production, Palur	1,70,000
131. Scheme for Improvement of Minor Pulses, Madurai	43,000
132. Scheme for Improvement of Manjamakkattai & Thalaivirichan Cholam, Vamban	1,70,000
133. Scheme for Upgrading the Sugarcane Experiment Station, Cuddalore	2,72,000
134. Scheme for Strengthening of Breeding Work in Pulses, Pudukottai	1,33,000
135. Research on Dryland Horticultural Crops in Red Soil Tract, Killikulam	1,82,000

136.	Scheme for Seed Production Practices in Upland Rice, Paramakudi	1,90,000
137.	Scheme for Studies on the role of VA-mycorrhizal fungi in the establishment of P nutrition of Agricultural and Plantation Crops, Coimbatore	25,000

Schemes Fully Financed by ICAR

1	Scheme for Establishment of Krishi Vigyan Kendra, Trichy	4,02,000
2.	Scheme for Establishment of Krishi Vigyan Kendra, Pondicherry	6,02,000
3.	All India Co-ordinated Rice Improvement Project, Pondicherry	1,93,000
4.	Scheme for Production of Breeder Seed of Annual Oilseed Crops, Bhavanisagar	52,000
5.	Scheme for Conjective use of Ground Water, CARDS, Coimbatore	1,25,000
6.	Scheme for Breeder Seed-NSP-Agrl. Research Station, Bhavanisagar	58,000
7.	Co-ordinated Scheme on National Demonstration on Major Food Crops, Namakkal	1,51,000
8.	All India Co-ordinated Research Project for the Rapid Improvement of Agrl. Technology directed at Socio-economic upliftment SC/BC, Aruppukottai	1,91,000
9.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Madurai	30,000
10.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Coimbatore	30,000
11.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Pondicherry	30,000
12.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Trichy	30,000
13.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Vridhachalam	30,000
14.	Scheme for Lab to Land Programme, Krishi Vigyan Kendra, Kattupakkam	30,000
15.	Scheme for Nitrogen Fertilizer Efficiency under U. S. Collaboration, Coimbatore	1,77,000
16.	Scheme for Establishment of Krishi Vigyan Kendra at Kattupakkam	2,40,000
17.	Scheme for Establishment of Krishi Vigyan Kendra at Vridhachalam	2,60,000
18.	Scheme for increasing income and employment through optimal farm planning and identification of constraints, Coimbatore	46,000
19.	AICORP-Pearl Millet Improvement Project, Coimbatore	1,89,000
20.	Breeder Seed Production (Vegetable) under NSP, Periakulam	3,75,000
21.	Isolation and Identification of Antiviral Principles in Plant Extracts and Preparation of Effective antiviral Formulations, Coimbatore	31,000
22.	Studying the Impact of Modernisation in Agriculture on Woman with a Special reference to Rice Farming Systems in the Country, Coimbatore	40,000

23.	Scheme for Breeder Seed Production of Annual Oilseeds Crops, Groundnut Seed Production Centre, Vridhachalam	58,000
24.	Scheme for Capital Requirement for Modernisation of Indian Agriculture, Coimbatore	95,000
25.	Scheme for Development of Homozygous Dishaploid Lines from Indica x Japanica Hybrids through Androgenesis in Rice, Coimbatore	72,000
26.	Scheme for Potato-Cyst Nematode for Investigation on Host Plant Resistance and Cultural Methods of Control, Ooty	1,17,000
27.	Evaluation of High Yielding Fodder Types in Small Millets, Coimbatore	46,000
28	Scheme for Land to Lab Programme, Coimbatore	3,000
29.	Studies on the Selection of Saline and Acid Tolerant Blue green Algae and Nitrogen Fixation in Rice soil ecosystem, Coimbatore	2,16,000
30.	Onfarm Research in Annual Oil Seed Crops, Vridhachalam	20,000
31.	Onfarm Research in Annual Oil Seed Crops, Coimbatore	9,000
32.	Onfarm Research in Annual Oil Seed Crops, Aliyarnagar	13,000
33.	Onfarm Research in Annual Oil Seed Crops, Tindivanam	9,000
34.	Onfarm Research in Annual Oil Seed Crops, Bhavanisagar	13,000
35.	Scheme for Biological Control of Nitrogen Fertilizer, Coimbatore	72,000
36.	Onfarm researches on soybean, Coimbatore	11,000
37.	Scheme on development of methods for management of virus diseases of greengram and blackgram, Coimbatore	1,33,000
38.	Adaptive Research on Sugarcane, Cuddalore	7,89,000
39.	Isolation and characterisation of microbial products involved in stable soil Aggregation, Coimbatore	1.35,000
40.	Diversification of male sterile lines in pearl millet, Coimbatore	1,18,800
41.	Promotion of Research and development efforts in hybrids in selected crops, sunflower, pigeonpea, rice, pearl millet, Coimbatore Sunflower-Bhavanisagar	33,90,000
42.	Agro-technique for maximising yield in chewing tobacco in Western Ghats, ARS. Bhavanisagar	95,000
43.	Biological control of a few major insect pests associated with sugarcane, coconut, banana and mango crops by using entomophilic nematodes, Madurai	1,37,000

NARP Phase II

North Eastern Zone

1.	*Strengthening the University Research Centre, Vellore*	27,12,000
2.	Strengthening of the Livestock Research Station, Kattupakkam	10,53,000

North Western Zone

3.	Strengthening of the Regional Research Station, Paiyur	7,44,000
4.	Strengthening the Mecheri Sheep Research Station, Pottaneri	11,35,000
5.	Strengthening of the Special Sub-Station, Namakkal	12,55,000

Cauvery Delta Zone

6.	Strengthening of the Tamilnadu Rice Research Institute, Aduthurai	7,73,000
7.	Strengthening the Sub-station Soil Salinity Research Centre, Trichy	17,000
8.	Strengthening of Soil and Water Management Research Institute, Kattuthottam, Thanjavur	13,08,000
9.	Strengthening the Sugarcane Research Station, Sirugamani	15,32,000

Western Zone

10.	Strengthening the Agricultural Research Station, Bhavanisagar	12,85,000
11.	Strengthening the Forestry Research Station, Mettupalayam	27,56,000
12.	Strengthening the Horticultural Research Station, Periyakulam	21,55,000

Southern Zone

13.	Strengthening the Regional Research Station, Aruppukottai	7,05,000
14.	Strengthening the NPRC, Pudukottai	7,05,000
15.	Strengthening the Cotton Research Station, Srivilliputhur	1,70,000
16.	Strengthening the Special Sub Station at AC&RI, Killikulam	1,96,000

Hilly & Tribal Zone

17.	Strengthening the Horticultural Research Station, Yercaud	20,87,000
18.	Strengthening the Horticultural Research Station, Vijayanagram	8,10,000
19.	Strengthening the SBRS, Sandynallah	1,22,000
20.	Establishment of RRS, Pechiparai with Sub Station at Thirupathisaram	10,66,000

Schemes Partly Financed by ICAR (Agriculture)

1.	Integrated Scheme for Water Management and Soil Salinity, Bhavanisagar	3,36,000
2.	All India Coordinated Agronomic Research Project, Cropping System Research, Coimbatore	3,18,000
3.	Integgrated Scheme for Water Management and Soil Salinity, Madurai	3,30,000

4.	All India Coordinated Research Project for Dryland Agriculture, Kovilpatti	5,76,000
5.	All India Coordinated Research Project on Soil Test with Crop Response, Coimbatore	2,35,00
6.	All India Coordinated Research Project on Sugarcane, Cuddalore	65,000
7.	All India Coordinated Agronomic Research Project - Experiment on Cultivator's Field, Tirur	1,79,000
8.	All India Coordinated Agronomic Research Project - Experiment on Cultivator's Field, Pudukkottai	1,78,000
9.	All India Coordinated Agronomic Research Project - Experiment on Cultivator's Field, Bhavanisagar	1,02,000
10.	All India Coordinated Agronomic Research Project - Model Agronomic Experiments, Thanjavur	1,79,000
11.	All India Coordinated Research Project on Oilseeds, Coimbatore	2,19,000
12.	All India Coordinated Research Project on Oilseeds, Off-season Nursery Project, Aliyarnagar	98,000
13.	All India Coordinated Research Project on Oilseeds, Bhavanisagar	48,000
14.	All India Coordinated Research Project on Oilseeds, Main Centre for Groundnut, Vridhachalam	6,62,000
15.	All India Coordinated Research Project on Oilseeds, Sub-Centre for Castor Research, Tindivanam	98,000
16.	All India Coordinated Rice Improvement Project, Coimbatore	4,02,000
17.	All India Coordinated Rice Improvement Project, Aduthurai	4,10,000
18.	All India Coordinated Rice Improvement Project, Madurai	40,000
19.	All India Coordinated Research Project for Improvement of Small Millets, Coimbatore	1,83,000
20.	All India Coordinated Research Project for Improvement of Sorghum, Coimbatore	3,31,000
21.	All India Coordinated Research Project on Jute and Allied Fibres, Coimbatore	1,02,000
22.	All India Coordinated Cotton Improvement Project, Coimbatore	4,70,000
23.	All India Coordinated Cotton Improvement Project, Kovilpatti	1,87,000
24.	All India Coordinated Cotton Improvement Project, Srivilliputhur	3,23,000
25.	All India Coordinated Research Project for Intensification of Research on the Improvement of Pulses, Coimbatore	4,69,000
26.	All India Coordinated Research Project for Intensification of Research on the Improvement of Pulses, Vamban	5,47,000
27.	All India Coordinated Research Project on Soybean, Coimbatore	99,000

28.	All India Coordinated Research Project on Forage Crops, Coimbatore	1,17,000
29.	All India Coordinated Research Project on Plant Parasitic Nematodes with Integrated approach for their control, Coimbatore	1,73,000
30.	All India Coordinated Research Project on Pesticides Residues, Coimbatore	1,89,000
31.	Scheme on Coordinated Research Project on Seed Borne Diseases, Coimbatore	81,000
32.	Scheme on Coordinated Research on Biological Nitrogen Fixation, Coimbatore	1,00,000
33.	All India Coordinated Research Project on Tuber Crops, Coimbatore	1,48,000
34.	All India Coordinated Vegetable Improvement Project, Coimbatore	2,36,000
35.	All India Coordinated Arid Fruit Improvement Project, Coimbatore	3,48,000
36.	All India Coordinated Spices Improvement Project, Coimbatore	1,15,000
37.	All India Coordinated Spice Improvement Project, Vridhachalam	1,71,000
38.	All India Coordinated Research Project on Palms, Veppankulam	2,88,000
39.	All India Coordinated Research Project on Palms, Coimbatore	44,000
40.	All India Coordinated Arid Fruit Improvement Project, Periyakulam	2,16,000
41.	All India Coordinated Floriculture Improvement Project, Coimbatore	1,61,000
42.	All India Coordinated Arid Fruit Improvement Project, Aruppukkottai	2,23,000
43.	Scheme for Research on Cardamom, Yercaud	99,000
44.	All India Coordinated Research Programme on Post - Harvest Technology in Horticultural Crops, Periyakulam	1,58,000
45.	All India Coordinated Research Project on Under Utilised and Under Exploited Plants, Mettupalayam	1,18,000
46.	All India Coordinated Research Project on Agro-forestry, Mettupalayam	2,14,000
47.	All India Coordinated Mushroom Improvement Project, Coimbatore	1,30,000
48.	Scheme for Studies on Harvest and Post-Harvest Technology, Coimbatore	4,63,000
49.	Scheme for Energy Requirement in Intensive Agricultural Production, Coimbatore	4,60,000
50.	All India Coordinated Scheme for Research and Development and Farm Implements, Machinery and Production of Prototypes and their evaluation under different Agroclimatic conditions, Coimbatore	6,71,000

51.	Scheme for Intensive Testing of Power Tiller and Research and Development of New Machines to Make them Versatile, Coimbatore	1,61,300
52.	Scheme for All India Coordinated Research Project on Renewable energy sources for Agriculture and Agro-Base Industries, Coimbatore	3,92,000
53.	All India Coordinated Research Project on Long Term Fertilizer Experiments, Coimbatore	91,000
54.	All India Coordinated Scheme on Micronutrients of Soils, Coimbatore	2,25,000
55.	All India Coordinated Scheme for studies on Measurement, Evaluation and Improvement of Soil Physical conditions to Increase Agri. Production of Problematic Areas, Coimbatore	1,97,000
56.	All India Coordinated Research Project on Betelvine Disease, Sirugamani	1,55,000
57.	All India Coordinated Research Project on Biological Control of Crop Pests and Weeds, Coimbatore	1,48,000
58.	All India Coordinated Research Project on Weed Control, Coimbatore	1,93,000
59.	All India Coordinated Research Project on Palms, Aliyarnagar	1,35,000
60.	All India Coordinated Research Project on Agro-Meteorology, Kovilpatti	1,50,000
61.	All India Coordinated Research Project on Maize Improvement Coimbatore	1.61,000
62.	All India Coordinated Research Project on Integrated Energy and Nutrient Supply System, Coimbatore	2,36,000
63.	All India Coordinated Research Project on Oilseeds, Palms, Aduthurai	80,000
64.	All India Coordinated Research Project on Acaroloy, Coimbatore	1,22,000

Government of India Schemes

1.	Scheme for studying the Cost of Cultivation of Principal Crops CARDS, Coimbatore	17,54,000
2.	Scheme for Setting up Regional Centre for Biogas, College of Engineering, Coimbatore	4,55,000
3.	Scheme for National Project on Development of Biofertilizer - Establishment and Multiplication of Bluegreen Algae, Dept. of Agrl. Microbiology, AC & RI, Coimbatore	10,000
4	Scheme for Establishment of Rice Processing and Allied Equipments, Coimbatore	95,000

5.	Standardization of Development of Biogas Plant Components and Enriched Process techniques for NDC gas output, Coimbatore	94,000
6.	Scheme for Establishment of Plastic Culture Development, Plastic Cultural Application and Development in Agrl. Operation, Coimbatore	1,43,000
7.	Scheme on Technology Mission on Edible Oils, Submission in Tissue culture, Production of Coconut, Coimbatore	1,67,000
8.	Scheme for Establishment of Regional Centre for Fuel Efficient Stove Technology, Coimbatore	1,79,000
9.	Scheme for Comparative Studies on Sprinkler and Drip Irrigation methods with conventional surface method, ARS, Bhavanisagar	1,07,000
10.	Scheme on Mechanism of Ligno Cellulose Degradation in Anerobic Digestion Methanogenesis, Coimbatore	99,000
11.	Scheme for Survival and Effectiveness of Rhizobial inoculants in Rice Fallow Pulses, AC & RI, Coimbatore	48,000
12.	Scheme for Establishment of Bio-Energy Centre, CAE, Coimbatore	5,39,000
13.	Scheme for Studies on Black soil Region Around Adivelli in PAP Command Area with a view to Alleviate Salt and Water Logging Problem, Coimbatore	84,000
14.	Scheme entitled Post Graduate Education and Training Programme Leading to M. Sc. degree in Agricultural Biotechnology under DBT Post Graduate Programme, Coimbatore	24,55,000
15.	Environment protection by Developing Relation Between Vegetation, Stream Flow and Ground Water in Kodaikanal	81,000
16.	Scheme on evaluation of the extent of pollution in Nilgiris (Westernghat), Coimbatore	46,000
17.	Establishment of user centre at Tamil Nadu Agricultural University, Coimbatore under Bio-Technology Information System (BTIS), a National Infrastructural facility, Biotechnology Unit, Coimbatore	1,50,000
18.	Biological control of insect pests through Bio-technology, Coimbatore	30,88,000
19.	Biological control of root rot diseases of pulses and oilseeds and mass multiplication of antagonists, Coimbatore	13,39,000
20.	Establishment of pilot plants for mass production of Trichogramma and Chrusopa and field studies with genetically improved strains, Coimbatore	11,02,000
21.	Scheme for increasing the biomass of forests tree species by the use of mycorrhizal fungi, Coimbatore	72,000

22.	DNES - Microbiology of methane production from cattle dung, human waste, piggery waste and sago industry effluent, Coimbatore	10,80,000
23	Test kit for fermentative and methanogenic anaerobic bacteria, Coimbatore	2,65,000
24.	Nitrogen fixation and carbon assimilation in stem nodules of sesbania rostrata, Coimbatore	82,000
25.	Production on fruit and vegetable, augumenting vegetable seed production, Periakulam, Bhavanisagar, Coimbatore, Palur	5,00,000
26.	Establishment of an advanced centre of training in water management technology, Coimbatore	22,28,000

Private Agency Schemes

1.	Research project on utilisation of Coirpith in Agricultural farm, Coimbatore	40,000
2.	Establishment of IFFCO chair of Professor of Agronomy, Coimbatore	57,000
3.	SPIC Chair of Professor of Soil Science, Coimbatore	57,000
4.	Potash Research Institute, Research project for maximisation of yield in rice, Coimbatore	48,000
5.	Seshsayee Paper and Board-Studies on the effect of paper and sugar factory effluents on soil microflora and agricultural cropping system, Coimbatore	42,000
6.	Rallis India-Institution of Professional Chair in Agricultural Entomology, Coimbatore	65,000
7.	Scheme for strengthening of Coffee teaching and training for under-graduate and postgraduate degree courses in Horticulture, Yercaud	1,05,000
8.	Studies on the multi residues of pesticides in spices (Spices Board) Kerala, Coimbatore	76,000
9.	Scheme for Institution of Chair in Agricultural Marketing Management, State Agricultural Marketing Board, Coimbatore.	85,000
10.	Investigations on soil and water resources for maximising sugarcane production in Sivaganga unit area of Sakthi sugars, Madurai.	1,32,000
11.	Evaluation of the controlled release of carbofuran formulation developed by National Chemical Lab, Pune, Coimbatore	38,000
12.	Sakthi Sugars - Studies on the effect of alcohol distillery effluent on soil fertility status, yield and quality of crop produce, Coimbatore	5,75,000
13.	Study on the optimization of resource use in the farming system at Kalyarkoil block (Action Acid, Bangalore), Coimbatore	30,000

International Collaborative Schemes

1.	Ford Foundation-Scheme for training of women in Enterprise management to encourage their participation in Rural Development, Tuticorin	1,32,000
2.	Ford Foundation-Research Project on Planning of Rural Futures, an experiment, Coimbatore.	94,000
3.	IDRC scheme for Sesamum Research, Coimbotore	1,42,000
4.	IRRI Scheme-Collaborative Research Project on differential impact of modern rice technology favourable and unfavourable production environment in Asia, Coimbatore	2,94,000
5.	IRR/ Scheme-Socio-techno-economic component on botanical pest	51,000
	control in rice based cropping system, Aduthurai, Madurai	5,000
6.	IDRC Scheme for Sesamum Research, Vridhachalam	1,87,000
7.	Development and use of indigenous microbial pathogens for the control of *Heliothis armigera* and *Spodoptera litura* in different cropping system in South India, Coimbatore	7,00,000
8.	Research project in collaboration with IFPRI-Transfer of Agrl. technology and dynamics of information flow within the technology sector, Coimbatore	1,06,000
9.	Research project in collaboration with IFPRI-Rural infrastructure and agricultural growth, Coimbatore	1,78,000
10.	IFPRI-Response of major surface irrigation system to drought, Coimbatore	1,72,000
11.	National workshop on ground water management - Ford Foundation-Sponsoring Pilot study, Coimbatore	63,000
12.	Training rural women in enterpreneurial development for production and marketing of edible mushroom, Coimbatore, Paiyur, Trichy, Madurai, Killikulam	71,000
13.	Scheme on studies on the development of practical technology for Azolla sporocarp production, Coimbatore	30,000
14.	IFPRI-Modeling in irrigation investment, Coimbatore	1,06,000

State Government Schemes
(Agriculture)

1.	Hill Area Development Programme - The Nilgiris District - Use of Microbial processes for restoration of shola forests in Nilgiris, Ooty	75,000
2.	National water shed development programme for rainfed agriculture (NAWPRAG) conduct of adaptive trials, Paiyur	50,000
3.	Preparation of Project report on Post Harvest Technology, Coimbatore	1,00,000
4.	Evaluation of productivity of oilseeds in Tamil Nadu, Oilseed Growers Ltd., CARDS, Coimbatore.	30,000

APPENDIX III

LIST OF BOOKS / BOOKLETS PUBLISHED

English

1. Oyster Mushroom Production
2. Basic Research for Crop Disease Managemen
3. Water Storage Structures for Dryland Farming
4. Agricultural Marketing
5. Basic Economics
6. Statistics Work Book for Insecticide Toxicology
7. Practical Analytical Chemistry
8. A Guide on Crop Pests
9. Insect Pest Management
10. Changing Land Value and Widening Disparities
11. Localization in Agriculture in Tamil Nadu
12. Activities and Achievements of Scheduled Caste Area Research
13. Analysis of Proximate and Ultimate Constituents of Crops
14. Agronomic Terminology - 1989
15. Betelvine Cultivation
16. Nutritional Disorders of Plants - Rice
17. Laboratory Manual for Internal Anatomy and Physiology of Insects
18. Forest Entomology-Practical Guide
19. New Power Tiller Technologies
20. Renewable Energy Source in Agriculture
21. Potato Cyst Nematode in Tamil Nadu

Tamil

1. நமது உணவு
2. வேளாண்மையில் தென்னை நார் கழிவு
3. சிப்பிக் காளான்
4. பயிர் நோய் தடுப்பு முறைகள்
5. தென்னையில் பூச்சி கட்டுப்பாடு
6. பூச்சி தடுப்பு முறைகள்
7. பருத்தி வெள்ளை ஈ
8. ஒருங்கிணைந்த பண்ணைய நிர்வாகம்
9. சோயா மொச்சை
10. நேரடி நெல் விதைப்பு
11. காவிரி பாசனப் பகுதிக்கு ஏற்ற இயற்கை உரங்கள்
12. பண்ணைக் குளங்களில் மீன் வளர்ப்பு
13. தென்னங் கன்றுகளும் அவற்றை நடும் முறைகளும்
14. தமிழ்நாட்டின் உயர் விளைச்சல் நெல் இரகங்கள்
15. தமிழ்நாட்டின் உயர்விளைச்சல் எண்ணெய் வித்துக்கள் மற்றும் பயறு வகைகள்
16. காவிரி புது ஆற்றுப் பாசனப் பகுதி முக்கியப் பயிர்களுக்கேற்ற மண் மற்றும் நீர் நிர்வாகம்
17. மணமூட்டும் பயிர்களின் சாகுபடிக் குறிப்புகள்
18. கமலா ஆரஞ்சு, மாதுளை, அன்னாசி சாகுபடிக் குறிப்புகள்
19. ஆடிப்பட்ட முனைப்பு இயக்கம் - வீட்டுக் காய்கறித் தோட்டம்
20. மிளகாய் சாகுபடி நுட்பங்கள்
21. கரும்பு சாகுபடி நுட்பங்கள்
22. திருந்திய பண்ணைக் கருவிகள்
23. பயிர் பாதுகாப்புக் கருவிகள்

APPENDIX IV

List of Research Papers Published

AGRICULTURE

Agricultural Biochemistry

1. Krishnaveni, S., Theymoli Balasubramanian and S. Sadasivam, 1990. Potentiality of sweet sorghum for alcohol production and syrup preparation. *Economic Botany*, 44.

2. Manickam, A. and S. Sadasivam. 1989. *In vitro* approaches to genetic manipulation in plants. Biotechnology for crop improvement. Proceedings of national seminar on molecular biology and biotechnology. Kottayam p. 30-42.

3. Sadasivam, S. and A Manickam. 1989. Rhizobium-Plant interaction: The molecular genetics. *Biotechnology for crop improvement*, p. 43-50.

4. Thayumanavan. B. and S. Sadasivam. 1989. Influence of exogenous nitrogen on ureide concentration, nitrogenase and allantoinase activities on greengram plants. *Journal of Ecobiology*, 1 : 118-122.

5. Velusamy, R., B. Thayumanavan, S. Sadasivam and S. Jayaraj. 1990. Effect of steam distillate extract of resistant wild rice *Oryza officinalis* on behavior of brown planthopper. *Journal of chemical Ecology*, 16 (3) : 281-289.

6. Velusamy, R., B. Thayumanavan and S. Sadasivam. 1989. Toxicity of steam distillate extract of wild rice *Oryza officinalis* to first-instar nymphs of leaf and planthoppers. *Annual Plant Resistance to Insects Newsletter*, 15 : 48.

Agricultural Botany

1. Alamelu, S. and C. Padmanaban. 1990. Somatic embryo genesis in guinea grass (*Panicum maximum* Jaq.) Paper presented in National Seminar in Biotechnology. Feb. 8-10, 1990. Kottayam, Kerala.

2. Anandakumar, C. R., G. Soundaiapandian and M. Subramanian. 1988. Floral character of CMS and maintainer lines in Hybrid rice, *IRRN.*, 14(2) : 6.

3. Anandakumar, C. R. and M. Subramanian. 1989. Genetic divergence in upland rice. *IRRN.*, 14(4) : 6.

4. Anandakumar, C. R. and M. Subramanian. 1989. Performance of IRRI hybrid at Madurai Centre. *IRRN*, 14(3):

5. Dharmalingam. C. and R. N. Basu. 1989. Seed quality as influenced by the diameter of the capitulum in sunflower, *Seed Research*, 17(1) : 1-5.

6. Gomathinayagam, P., C. M. Pappiah and G. Soundarapandian. 1988. Path co-efficient Analysis in Upland varieties of Rice. *Madras Agric J.* 75(11-12) : 449-50.

7. Ganesan, K. and M. Subramanian. 1990. Genetic studies of the F_2 and F_3 of *tall and semi dwarf rice varieties. IRRN,* 16(1): 5.

8. Henry Louis, I., C. Jayanthi and Sukanya Subramanian. 1989. Induced dwarf guinea grass mutant. *TNAU Newsletter*, June 1989.

9. Ibrahim, S. M., A. Ramalingam and M. Subramanian. 1990. Using Metro-glyph Analysis to study variability in early generations of rainfed low land rice. *IRRN*, 15 (1): 8.

10. Ibrahim, S. M., A. Ramalingam and M. Subramanian. 1990. Path analysis of rice grain yield under rainfed lowland conditions. *IRRN*, 15 (1): 11.

11. Jayanthi, C., V. Veerabadran and I. Henry Louis. 1989. Suitable high yielding rainfed legume for Northwestern zone. *TNAU Newsletter*, April 1989.

12. Jebaraj, S., M. Kadambavanasundaram and G. S. Soundarapandian. 1988. A comparitive study of heterosis on hybrids of male sterile lines with indegenous sorghum cultivars. *Madras Agric. J.*, 75 : 161-163.

13. Maheswaran, M. and M. Subramaian. 1989. Seedling screening for cold tolerance. *IRRN*, 14 : 21.

14. Maheswaran, M. and S. R. Sree Rangasamy. 1989 Influence of genotype and culture media on callus induction and plant regeneration in Oryza species. *J. Genet. and Breed.*, 43 : 165-170.

15. Muthiah, A. R., S. Palanisamy and P. Manivaskam. 1989. Combining ability analysis for yield in Maize (*Zea mays*. L). *Madras Agric. J.*, 76(2) : 77.

16. Murugarajendran, C., P. Rangasamy and S. R. Sree Rangasamy. 1989. Early *determinate redgram hybrids for break through in production in Tamil Nadu.* Paper presented in thc National Seminar on Redgram. Gulburga, 1989.

17. Natarajan, C. 1988. Association and genetic diversity studies in greengram. *Madras Agri. J.* 75 : 238 - 245.

18. Natarajan, C. 1988. Combining ability in mungbean. *Indian J. Pulses Res.*, 2 (1) : 15 - 19.

19. Natarajan, M. and S. Palanisamy. 1989. Genetic diversity and heterosis in mungbean. *New Botanist*, 16 (4) : 9 - 13.

20. Natarajan, M. and S. Palanisamy. 1989. Path analysis and selection indices for mungbean based on dry matter components. *New Botanist*, 16 (1-4) : 253 - 259.

21. Paramasivan, K. S. 1989 Association of grain yield and its components in in thirteen rice accessions resistant to leaf folder. *Oryza*, 26 : 84-87.

22. Periah, K., Manimekalaigurunathan and M. Stephen Dorairaj, 1989. Organogenesis from immature leaflets of *Arachis hypogaea* L : IX and X - Annual Conference of Indian Association of Biomedical Scientists, 9th and 10th September 1989.

23. Rangaswamy, S. R. S., S. R. Raina,. W. W. Manuel, K. Natarajamoorthy, S. Palanisamy and M. Gurunathan. 1989. Performance of anther derived rice lines. *IRRN*, 14 (2) : 4.

24. Rangasamy, M. and M. Subramanian. 1989. ASD 17 A short duration variety for tail end irrigation area of Thamirabarani delta and Kanyakumari District of Tamil Nadu. *IRRN*, 14 (4) : 24.

25 Rangasamy, P., C. Murugarajendran and S. R. Sree Rangasamy. 1989. Strategies for Pulses production. Status and Development in Tamil Nadu. Paper presented in the National Seminar on Redgram. Gulburga. 1989.

26. Selvi, B. and S Palanisamy. 1989 Partitioning analysis in sweet sorghum. *Annals of Agric. Res.*, 10 (2) : 204 - 206.

27. Shanmugasundaram, P., R. Rajagopalan, G. Soundarapandian, A. Ayyamperumal, R. S. Annappan and S. R. Sree Rangasamy. 1988. CO 5, A new blackgram varity for dry farming. *Madras Agric. J.*, 75 (11-12) : 391 - 395.

28. Sivasubramanian, V., S. Ganapathy, A. P. M. Kirubakaran Sundararaj and N. Nadarajan. 1989. Yield of F. 1 hybrids at Tamil Nadu Rice Research Institute, Aduthuari, India. *IRRN*, 14 (3) : 9.

29. Sivasubramanian, V., S. Ganapathy, A. P. M. Kirubakaran Soundararaj and Nadarajan. 1989. Evaluation of some CMS and maintainer lines in Tamil Nadu. *IRRN*, 14 (3) : 10.

30. Sree Rangasamy, S. R., V. Muralidharan, R. Rathinasamy and R. Chandra Babu 1989. Distant hybridization for crop improvement in *Vigna*. National sym-

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